

Permit Fact Sheet

General Information

Permit Number:	WI-0046477-05-0
Permittee Name:	General Mitchell International Airport
Address:	5300 South Howell Ave
City/State/Zip:	Milwaukee WI 53207-6156
Discharge Location:	001: 42.945134°N, 87.911042°W 003: 42.930260°N, 87.890071°W 007: 42.957894°N, 87.909271°W
Receiving Water:	001: Kinnickinnic River via two tributaries (WBIC 5036963 to Holmes Avenue Creek (WBIC 15550)) of Wilson Park Creek. 003: Oak Creek via Mitchell Field Ditch (WBIC 14800) 007: Kinnickinnic River via Wilson Park Creek Kinnickinnic River and Oak Creek both ultimately discharge to Lake Michigan.
StreamFlow (Q _{7,10}):	Wilson Park Creek: 0 cfs Tributary to Oak Creek: 0 cfs
Stream Classification:	Wilson Park Creek: WWSF, non-public water supply Tributary to Oak Creek: WWSF, non-public water supply

Facility Description

General Mitchell International Airport is approximately 2,200 acres in size and is served by a county owned storm sewer system consisting of about 25 miles of separate storm sewers and 5 miles of ditch. Sewage generated at the airport is sent to Milwaukee Metropolitan Sewerage District. Runoff from rain and snow melt at the airport during winter may contain propylene glycol and other chemicals used to deice or anti-ice aircraft and runways. Effluent from oil water separators on site is also discharged to the storm sewer. Deicing and anti-icing activities are mandatory requirements of the Federal Aviation Administration to ensure adequate safety for airport operations.

Discharges of contaminated runoff from deicing and anti-icing (preventative) activities are seasonal-only and occur during colder months. The deicing season is approximately from October through April. At other times, the runoff from the airport is typical of urban storm water runoff.

The deicer and anti-icers are composed of mostly propylene glycol with other additives as well. Glycol has a high biochemical oxygen demand (500,000 to 1,000,000 mg/L BOD₅), which can potentially deplete the dissolved oxygen in the receiving water, and additives in the glycol are toxic to aquatic life. Deicer and anti-icer usage during a deicing season ranges between 100,000 to 250,000 gallons per year (undiluted) depending on weather conditions. Propylene glycol-based deicing and anti-icing fluids make up the vast majority of the type of deicing products used at the airport now, as the use of ethylene glycol has been almost completely eliminated. This is because ethylene glycol is listed as a hazardous material, and there's a preference for propylene glycol for safety and greater value if recycled.

There are two categories of glycol products used for aircraft deicing, depending on whether they remove ice and snow or if they prevent it from accumulating. Type I deicing fluids are used to remove ice and snow on the aircraft. Type IV

fluids are used to prevent any accumulation of ice or snow on clean aircraft surfaces. Anti-icing fluids (Type IV) are thicker than Type I so the fluid adheres longer to the aircraft which provides increased holdover time prior to takeoff. For pavement deicing, the airport uses a liquid deicer potassium acetate or a solid mixture of sand and sodium acetate. Advances in the technology of deicing and anti-icing aircraft, including selection of freeze point depressants (glycol or some other chemical), improved application methods with hybrid deicing vehicles, use of new glycol formulations with less toxic additives, and conservation incentives, have been the main approaches to managing the environmental problems historically associated with airport runoff.

Airport runoff enters the storm sewer system and combines with upstream surface water flows that are routed through the storm sewer system. The storm sewer discharges into surface waters from three major outfalls. Two outfalls (001 and 007) enter the Kinnickinnic River via Wilson Park Creek and one outfall (003) discharges into a tributary to Oak Creek. The airport has been implementing a Storm Water Pollution Prevention Plan that is required under the existing WPDES permit to minimize the discharge of contaminated runoff into the airport's storm sewer system. A monitoring program of visual inspections and chemical analysis during the deicing season is used to characterize the quality of storm water runoff to evaluate best management practices, and to provide a continuing database for discharge quality changes. Monitoring locations consist of one inflow in Wilson Park Creek to the airport's storm sewer system, three storm sewer outfalls from the airport, oil and water separators at one fuel site, discharges from snow-melters, and the downstream receiving water in Wilson Park Creek.

Monitoring locations (sampling points) consist of:

- One sampling point (701) in Wilson Park Creek at Bailey's Pond to the airport's storm sewer system. This sampling point is used to identify pollutants coming into the airport's storm sewer system from areas outside the airport.
- Three storm sewer outfalls (sampling point/outfall 001, 003 and 007);
- One sampling point (101) to regulate discharges from MKE County's oil-water separator;
- Two sampling points (105 and 106) to regulate COD levels in discharges from snow-melters;
- One sampling point (601) at the downstream receiving water in Wilson Park Creek. The current permit includes downstream monitoring of Wilson Park Creek that was initially included as part of a USGS Study. In lieu of BOD limits, the permittee has agreed to continue this monitoring downstream in the reissued permit to document that the elevated levels of BOD in discharged wastewater and stormwater from deicing and anti-icing activities during winter months are not having a negative impact on dissolved oxygen levels in downstream waters. As long as downstream monitoring of dissolved oxygen levels in Wilson Creek continues, a BOD limit is not necessary in the permit; and

As part of their current Storm Water Pollution Prevention Plan to minimize the discharge of pollutants and impacts to the receiving water, the proposed permit includes goals to capture glycol to the maximum extent practicable and to reduce the amount of glycol used through conservation efforts. Current management practices consist of collecting glycol in the terminal area with glycol recovery vehicles that vacuum up residual glycol, centralized deicing pads with collection facilities, and use of the storm sewers as a temporary inline storage system that is pumped out after a deicing event. The recovered glycol is typically trucked to the anaerobic digesters at the Milwaukee Metropolitan Sewerage District. Recycling generally isn't feasible but may be a future option depending on market conditions. Conservation efforts and best management practices, which reduce the amount of glycol that otherwise would be used, consist of: mechanically brooming aircraft to remove snow, blending an event-specific dilution of glycol based on the ambient temperature, close spraying to prevent overspray, and hybrid technology that utilizes forced air.

The industrial wastewater and storm water activities onsite that are regulated by the proposed WPDES permit are deicing activities, snow-melting discharges and discharges from waterline flushing activities. Therefore, the only discharges that occur outside of deicing season (winter months) are discharges from waterline flushing activities and other contaminated runoff from paved areas that occur during precipitation events.

The current and proposed WPDES permit regulates discharges from the storm sewer system serving the airport. Major components or features of the permit include the following:

Major components or features of the proposed permit for reissuance include the following:

- Regulation of discharges from deicing and anti-icing activities into the storm sewer are considered both an industrial wastewater (discharge during dry weather) as well as industrial storm water (discharge during precipitation events);
- Regulation of discharges from snowmelters into the storm sewer based on EPA effluent limit guidelines for COD.
- Requirements for storm water pollution prevention plans which require implementation of best management practices that manage and control contaminated stormwater discharges.
- Annual report submittal that assesses permit compliance.
- Monitoring for pollutants during the deicing season is included as well as year-round monitoring for PFAS at Outfalls 003 and 007.
- A glycol capture goal, which measures the airport's success with glycol collection activities over time.

Sample Point and Outfall Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point/Outfall Location, WasteType/sample Contents and Treatment Description (as applicable)
601		Sample Point: Downstream surface water monitoring located approximately 5 miles downstream from Outfall 007. Sampling station is at Wilson Park Creek just before the confluence with the Kinnickinnic River, and across from St. Luke's Hospital.
701		Sample Point: Inflow monitoring of discharges ("Upstream") to Wilson Park Creek and the airport's storm sewer system that are from areas outside the airport (the City of Cudahy and Wisconsin Air National Guard 128 th on the east central side of the airport).
001	0.4 MGD	Sample Point/Outfall: Discharge of storm water runoff/industrial wastewater containing deicing fluids from the Cargo Ramp area to Wilson Park Creek tributary to the Kinnickinnic River. The outfall is located on the west side of the airport.
003	3.6 MGD	Sample Point/Outfall: Discharge of storm water runoff/industrial wastewater containing deicing fluids from the southern most runways and taxiways to a tributary of Oak Creek. The outfall is located at the southeast corner of the airport at College Avenue.
007	4.9 MGD	Sample Point/Outfall: Discharge of storm water containing deicing fluids/industrial wastewater and groundwater infiltration from the terminal ramp area plus the runways and taxiways on the north-central parts of the airport to Wilson Park Creek tributary to the Kinnickinnic River. The outfall is located at the northwest corner of the airport at Howell and Layton Avenues.
101	4 gpd	Milwaukee County hydrant fueling system pump station oil and water separator, which serves both the aviation and ground service equipment fueling areas.
105	121,833 gpd (when discharging, discharge is infrequent)	Sample Point: Deicer-containing snow stockpiled from plowing the terminal ramp and surrounding concourses may be melted by a snowmelter to manage the size of snow piles in the fuel farm area

Sample Point and Outfall Designation		
Sample Point Number	Discharge Flow, Units, and Averaging Period	Sample Point/Outfall Location, Waste Type/sample Contents and Treatment Description (as applicable)
		(Mount Mitchell). Clean snow may be melted and discharged into a storm sewer inlet and discharge at Outfall 007 if the melt water complies with COD effluent limitations. The melted snow is not subject to any treatment.
106	140,000 gpd (when discharging, discharge is infrequent)	Sample Point: Deicer-containing snow stockpiled from plowing the cargo ramp may be melted by a snowmelter to manage the size of snow piles (Runway 7R deicing pad area). Clean snow may be melted and discharged into a storm sewer inlet and discharge at Outfall 001 if the melt water complies with COD effluent limitations. The melted snow is not subject to any treatment.

1 Applicability

The “Co-Permittee” Section (Section 1 of current permit) has been removed, and under the proposed reissuance, Milwaukee County/GMIA is the sole permittee and ultimately responsible for compliance with the terms and conditions of this permit. This permit authorizes Milwaukee County to manage the airport tenants in whichever way is necessary to ensure compliance with this WPDES permit. The primary reason for removing this section is that Milwaukee County is the permit applicant, and this change simplifies the permit and allows Milwaukee County the maximum flexibility to take actions to ensure permit compliance. This permit authorizes Milwaukee County to manage the airport tenants in whichever way is necessary to ensure compliance with this WPDES permit. The primary reason for removing this section is to simplify the permit and allow Milwaukee County the maximum flexibility to take actions to ensure permit compliance. In practice, this change should not have any impact as it pertains to compliance monitoring, reporting, and inspections. Airport tenants are expected to continue to comply with the terms of this WPDES permit as instructed by GMIA.

Changes from Previous Permit:

“Authorized Discharges” (Section 2.2) and “Water Quality Standards” (Section 2.3) have been removed, as there is already an “Authorized Discharges” section in the proposed permit. “Individual Responsibilities” (Section 2.5) has been altered to make the language applicable to Milwaukee County’s actions, and not the former co-permittees. “Program Resources”, “Joint Responsibilities” (Section 2.6) and “Non-Co Permittees” (Section 2.7) have also been removed as these requirements either no longer apply or have been included in other sections of this permit.

1.1 Permitted Area

Minor changes to language in this section have been made to ensure that the requirements are clear.

1.2 Responsibilities

Sections 2.5 “Individual Responsibilities” and 2.6 “Joint Responsibilities” have been removed and replaced with this section 1.2 titled “Responsibilities” in order to make it clear that, though tenants may have their own individual responsibilities with regards to management of deicing practices and implementation of the SWPPP, ultimately MKE County is responsible for management of these activities as they pertain with WPDES permit compliance.

2 Authorized Discharges

Changes from Previous Permit:

Language has been modified in the following sections: “Storm Water Discharges” (Section 2.1), “Prohibited Discharges” (Section 2.3), and “Exclusions” (Section 2.4).

2.1 Storm Water Discharges - General

The language in this section has been modified in various areas to encompass all of the types of storm water that are covered under this WPDES permit while maintaining outfall descriptions and ensuring that the requirements are simplified. The permittee is not responsible for discharges not under its authority.

2.2 Industrial Wastewater & Storm Water Discharges

The changes to this section are the name, changed from “Process and Non-Process Wastewater Discharges” to “Industrial Wastewater & Storm Water Discharges,” to be more consistent with terminology.

2.3 Prohibited Discharges

The language in this section has been modified for clarification purposes. The title has also been changed from “Non-Storm Water Discharges” to “Prohibited Discharges” in order to clarify that these discharges are prohibited in the storm sewer system. Instead of covering all “Innocuous” discharges to the storm sewer system, this section references section 2.4(d), as the department does not have explicit authority under the current permit to cover certain discharges in Section 2.4. The department does not allow exemptions unless there is a specific justification or data showing that a discharge is not impacting water quality. Language in 2.3(a)-(c) has been added to give MKE County the authority to address prohibited discharges.

2.4 Exclusions

Section 2.4(a)’s language has been changed to reflect the extent of permit coverage.

Section 2.4(b)’s language has been changed to clarify that Sampling Point 701 tracks pollutants coming into the sewer system.

Section 2.4(c) has been removed to account for the fact that there are no longer “co-permittees” identified in this permit. Since all tenant activities are now regulated solely by MKE County, and there is no criteria for a “co-permittee”, there is no need to exclude tenant activities that contribute to the discharge not identified in Section 2.4(d).

Section 2.4(d) has been modified to remove discharges that are not excluded from NR 216, Wis. Adm. Code. s. NR 216.21(5)(c), Wis. Adm. Code identifies types of illicit discharges that are excluded from storm water WPDES permits. Types of illicit discharges removed from this section are: water line flushing discharges, aircraft washing, and pavement washwater.

Storm Water Pollution Prevention Plan

Language has been modified in the following sections: “Implementation” (Section 3.1), “Deicing and Anti-icing Infrastructure and Technology” (Section 3.3), and “End of Season Annual Summary” (Section 3.5). “Urea Prohibition” has been added to the End of Season Annual Summary.

2.5 Implementation

The language in this section has been modified to be more consistent with the requirements of ch. NR 216, Wis. Adm. Code.

2.6 Failure to Meet Glycol Capture Goal

There are no changes to this section’s language, except the word “comply” has been substituted with “meet” in order to more accurately reflect the expectation.

2.7 Deicing and Anti-icing Infrastructure and Technology

The language in this section has been changed to make the requirements more definite, with an added requirement to review and report on other deicing/anti-icing chemicals and emerging glycol recovery technologies.

2.8 Annual Inspection

There are no changes to this section’s language.

2.9 End of Season Annual Summary

The department recognizes that the End of Season Annual Summary is the primary mechanism that can be used to gauge MKE County’s/GMIA’s compliance with the WPDES permit. Therefore, the requirements of the End of Season Annual Summary have been changed to account for other changes in this permit. GMIA must now report the length of the deicing season, specifying the week that it officially started and the week that it ended. GMIA must also include a summary of weather events related to the deicing season to accompany the glycol data that’s submitted, including: total precipitation, and estimated amount of Type I ADF applied per aircraft.

3.5(g) (formerly 3.5(f)) now requires a narrative description of each storm event which is sampled, including the date and duration of the storm, precipitation amount and an estimate of the total volume of storm water discharged. This will assist with process optimization, allowing GMIA to review each storm event and assess whether different actions could be taken based on the precipitation amount and the data collected during that storm event.

3.5(j) has been added to indicate that the Urea prohibition certification should be included in the Summary.

3.5(k) is added to ensure that GMIA is exploring alternative technologies and best management practices to reduce the airport’s impact on local water quality.

3.5(l) is added to ensure that GMIA is actively taking steps toward converting the airport into a full deicing pad airport.

3.5(m) is added to ensure that GMIA is meeting the requirements of the Milwaukee River Basin TMDL. GMIA has allocations for both TSS and Phosphorus in the TMDL for outfalls 001 and 007.

3 Influent – Proposed Monitoring

3.1 Sampling Point(s)

Sample Point Number	Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)
601	Sample Point: Downstream surface water monitoring located approximately 5 miles downstream from Outfall 007. Sampling station is at Wilson Park Creek just before the confluence with the Kinnickinnic River, and across from St. Luke's Hospital.
701	Sample Point: Inflow monitoring of discharges ("Upstream") to Wilson Park Creek and the airport's storm sewer system that are from areas outside the airport (the City of Cudahy and Wisconsin Air National Guard 128 th on the east central side of the airport).

3.2 Monitoring Requirements

3.2.1 Sample Point Number: 601- Downstream at St. Luke's

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	See Permit Note	Estimated	
Dissolved Oxygen		mg/L	See Permit Note	Grab	
COD, Filtered		mg/L	See Permit Note	Grab	
BOD5, Total		mg/L	See Permit Note	Calculated	
Propylene Glycol		mg/L	See Permit Note	Grab	

Changes from Previous Permit:

Monitoring for TKN, Hexane, pH, TSS, and Phosphorus have been removed.

Monitoring (paired with monitoring at 701 and 007) for dissolved oxygen (DO) has been added.

Monitoring frequency for Flow Rate has been changed from "Quarterly" to "See Permit Note" (only during deicing events).

"Sample Type" has been changed from "Composite" to "Grab" for DO, COD, and PG.

"Sample Type" has been changed from "Composite" to "Calculated" for BOD5.

Explanation of Limits and Monitoring Requirements

Because permit compliance in the WPDES permit program is primarily evaluated by the effluent quality and, not determined by concentrations of pollutants in the receiving waterbody, monitoring for most of the pollutants (TKN Hexane, pH, TSS and phosphorus) in surface waters has been removed.

However, with regard to BOD5 discharges, monitoring for dissolved oxygen levels in downstream waters has been included in order to verify that the BOD5 concentrations from the airport during periods of deicing activities in colder months are not negatively impacting dissolved oxygen levels in downstream surface waters. Collection of dissolved oxygen data will support future determinations of the need for potential BOD5 limits at the outfalls. BOD5 and Propylene Glycol monitoring is included in order to evaluate the fate of these pollutants.

Monitoring frequency has increased to 10 times per deicing season in order to pair this data with data collected at the outfalls and influent sampling point 701.

Sample type for DO, COD, and PG has been changed from a composite to a grab in order to allow the permittee flexibility when monitoring. Also, the composite sampling station has been abandoned.

3.2.2 Sample Point Number: 701- Inflow at Bailey's Pond

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	See Permit Note	Estimated	
COD, Filtered		mg/L	See Permit Note	Composite	
BOD5, Total		mg/L	See Permit Note	Calculated	
Suspended Solids, Total		mg/L	See Permit Note	Composite	
pH Field		su	See Permit Note	Grab	
Dissolved Oxygen		mg/L	See Permit Note	Grab	
Phosphorus, Total		mg/L	See Permit Note	Composite	
Chlorine, Total Residual		ug/L	See Permit Note	Grab	
Chloride		mg/L	See Permit Note	Composite	
Hardness, Total as CaCO3		mg/L	See Permit Note	Composite	
Copper, Total Recoverable		ug/L	See Permit Note	Composite	
Zinc, Total		ug/L	See Permit Note	Composite	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Recoverable			Note		

Changes from Previous Permit:

Monitoring for TKN, Hexane and Propylene Glycol have been removed.

Monitoring frequency for all parameters is 6 to 10 qualifying storm events (to coincide with outfall monitoring).

Monitoring for DO, Chlorine, Chloride, Hardness, Copper, and Zinc is now included.

Explanation of Limits and Monitoring Requirements

The parameters that have been chosen most appropriate for monitoring coincide with the recommendations in the WQBEL memo (see Appendix B). In order to properly interpret data that is collected at Outfall 007, monitoring for all required parameters at inflow 701 is necessary. In the event there are any exceedances of limits from outfall discharges regulated under this permit, monitoring for these parameters at the inflow point will allow the department to evaluate whether the exceedances were primarily caused by sources outside of the airport or from areas within the airport that are subject to the limitations in this permit.

Monitoring up to 10 storm events during the deicing season is necessary to both build a larger dataset and use the data to compare the water coming into the airport area to the industrial wastewater that is leaving the airport.

3.2.3 Monitoring Special Conditions

Changes from Previous Permit:

s. 5.2.1.1 “Purpose,” s. 5.2.1.4 “Chemical Analysis,” s. 5.2.1.6 “Monitoring Frequency,” and s. 5.2.1.7 “Sampling Exemption,” have been removed

Language in s. 4.2.3.2 “Upstream and Downstream Sampling Procedure” has been altered.

Explanation of Limits and Monitoring Requirements

The reason for the removal of “Purpose,” “Chemical Analysis,” and “Monitoring Frequency” is because the requirements outlined in these sections are redundant and addressed through other existing sections of the permit.

The reason for the removal of “Sampling Exemption” is because compliance with this permit depends on the permittee regularly reporting data obtained during storm events. The fundamental assumption of compliance with this permit is that the permittee shall make all efforts to sample all required storm events during the permit term.

Language in s. 4.2.3.2 “Upstream and Downstream Sampling Procedure” has been altered to be more applicable to the specific sampling points. Because these are not “outfalls”, and reference to an outfall in this language has been removed, along with a narrative description of the storm event, as that language is redundant and addressed through other requirements outlined in this permit.

4 Inplant - Proposed Monitoring and Limitations

4.1 Sampling Point(s)

Sample Point Number	Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)
101	Milwaukee County hydrant fueling system pump station oil and water separator, which serves both the aviation and ground service equipment fueling areas.
105	Deicer-containing snow stockpiled from plowing the terminal ramp and surrounding concourses may be melted by a snowmelter to manage the size of snow piles in the fuel farm area (Mount Mitchell). Clean snow may be melted and discharged into a storm sewer inlet and discharge at Outfall 007 if the melt water complies with COD effluent limitations. The melted snow is not subject to any treatment.
106	Deicer-containing snow stockpiled from plowing the cargo ramp may be melted by a snowmelter to manage the size of snow piles (Runway 7R deicing pad area). Clean snow may be melted and discharged into a storm sewer inlet and discharge at Outfall 001 if the melt water complies with COD effluent limitations. The melted snow is not subject to any treatment.

4.2 Monitoring and Limitations

Changes from Previous Permit:

Sampling points 102 and 103 have been removed as those tenants are now required to apply for general permit coverage under the petroleum contaminated water general permit.

Explanation of Limits and Monitoring Requirements

Instead of classifying the airport tenants which operate oil-water separators in this permit as co-permittees, the department has made the determination that these permittees are best regulated separately from the glycol discharges from this individual permit. The reason for this is to ensure that when violations occur, the department can initiate stepped enforcement against the specific entities responsible and not have it considered a violation of the Airport's individual permit itself. This is also why sampling point 101, which is an oil-water separator operated by MKE County, is retained in this permit.

4.2.1 Sample Point Number: 101- Hydrant Fuel Farm

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		gpd	Quarterly	Estimated	
Oil & Grease (Hexane)	Daily Max	15 mg/L	Quarterly	Grab	
Suspended Solids, Total	Daily Max	40 mg/L	Quarterly	Grab	
BOD5, Total	Monthly Avg	20 mg/L	Quarterly	Grab	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
BETX, Total	Monthly Avg	750 ug/L	Annual	Grab	
PAHs	Monthly Avg	0.1 ug/L	Annual	Grab	
Benzo(a)pyrene	Monthly Avg	0.1 ug/L	Annual	Grab	
Naphthalene	Monthly Avg	70 ug/L	Annual	Grab	

Changes from Previous Permit:

Monitoring for BOD5 has been increased from “Annual” to “Quarterly”.

Explanation of Limits and Monitoring Requirements

Monitoring data shows that the permittee has had a few exceedances of BOD5 during the previous permit term; therefore, the monitoring frequency has been increased to ensure that the Hydrant Fuel Farm’s O&W separator is functioning properly. The monitoring frequency will be reevaluated during the next reissuance based on the collected data.

4.2.2 Oil Water Separator Requirements

Changes from Previous Permit:

There are no changes to the language in this section.

Explanation of Limits and Monitoring Requirements

The requirements for the oil water separator originate from the petroleum contaminated water general permit.

4.2.3 Sample Point Number: 105- Snowmelter Fuel Farm and 106- Snowmelter Cargo Ramp

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		gpd	Daily	Estimated	
COD, Filtered	Daily Max	271 mg/L	Daily	Grab Comp	
COD, Filtered	Monthly Avg	154 mg/L	Daily	Grab Comp	

Changes from Previous Permit:

The condition that the permittee can get lessened monitoring frequency has been removed from this section of the permit.

Explanation of Limits and Monitoring Requirements

The condition that the permittee can get lessened monitoring frequency has been removed from this section of the permit because of the COD exceedances associated with the snowmelters. Additionally, the snowmelters are not used very often (only about once or twice a year at most).

The effluent limitations originally are derived from 40 CFR Part 449's New Source Performance Standards. These limits are based on the department's best professional judgement, as existing airports only have effluent limitation guidelines if they deice using urea.

5 Surface Water - Proposed Monitoring and Limitations for Outfalls

5.1 Sampling Point(s)

Sample Point Number	Sample Point/Outfall Location, WasteType/sample Contents and Treatment Description (as applicable)
001	Sample Point/Outfall: Discharge of storm water runoff/industrial wastewater containing deicing fluids from the Cargo Ramp area to Wilson Park Creek tributary to the Kinnickinnic River. The outfall is located on the west side of the airport.
003	Sample Point/Outfall: Discharge of storm water runoff/industrial wastewater containing deicing fluids from the southern-most runways and taxiways to a tributary of Oak Creek. The outfall is located at the southeast corner of the airport at College Avenue.
007	Sample Point/Outfall: Discharge of storm water containing deicing fluids/industrial wastewater and groundwater infiltration from the terminal ramp area plus the runways and taxiways on the north-central parts of the airport to Wilson Park Creek tributary to the Kinnickinnic River. The outfall is located at the northwest corner of the airport at Howell and Layton Avenues.

5.2 Monitoring and Limitations

5.2.1 Sample Point Number: 001- Cargo Ramp Runoff to Wilson Park Creek

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	See Permit Note	Estimated	
COD		mg/L	See Permit Note	Composite	
BOD5, Total		mg/L	See Permit Note	Calculated	
Suspended Solids, Total		mg/L	See Permit Note	Composite	Narrative Interim Limit.
pH Field	Daily Max	9.0 su	See Permit Note	Grab	
pH Field	Daily Min	6.0 su	See Permit Note	Grab	
Dissolved Oxygen		mg/L	See Permit Note	Grab	
Phosphorus, Total		mg/L	See Permit Note	Composite	Narrative Interim Limit.
Propylene glycol		mg/L	See Permit Note	Composite	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Chlorine, Total Residual		ug/L	See Permit Note	Grab	
Chloride		mg/L	See Permit Note	Composite	
Hardness, Total as CaCO ₃		mg/L	See Permit Note	Composite	
Copper, Total Recoverable		ug/L	See Permit Note	Composite	
Zinc, Total Recoverable		ug/L	See Permit Note	Composite	
Acute WET		TUa	See Permit Note	Grab	

Changes from Previous Permit

Monitoring frequency for the following parameters has been increased from “Quarterly” to one sample every 4 days of active snow removal, up to 10 events:

- Flow Rate
- pH
- Phosphorus
- Propylene glycol
- TSS
- COD
- BOD₅

Monitoring is now required for one sample every 4 days of active snow removal, up to 10 events for the following new parameter:

- Dissolved Oxygen (DO)

Monitoring is now required for one sample every 4 days of active snow removal, up to 6 events for the following new parameters:

- Chloride
- Chlorine
- Hardness
- Copper
- Zinc

pH limits are now included.

Acute WET Testing is now required for all outfalls 3x/deicing season, beginning in the 2023-2024 deicing season.

Explanation of Limits and Monitoring Requirements

For a complete explanation/justification of the water quality parameters, please see the summary explanation below for all three outfalls and also see Appendix B for a more detailed explanation.

5.2.2 Sampling Point (Outfall) 007 - Terminal Ramp Runoff to Wilson Park Creek

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	See Permit Note	Estimated	
COD		mg/L	See Permit Note	Composite	
BOD5, Total		mg/L	See Permit Note	Calculated	
Suspended Solids, Total		mg/L	See Permit Note	Composite	Narrative Interim Limit.
pH Field	Daily Max	9.0 su	See Permit Note	Grab	
pH Field	Daily Min	6.0 su	See Permit Note	Grab	
Dissolved Oxygen		mg/L	See Permit Note	Grab	
Phosphorus, Total		mg/L	See Permit Note	Composite	Narrative Interim Limit.
Propylene glycol		mg/L	See Permit Note	Composite	
Chlorine, Total Residual		ug/L	See Permit Note	Grab	
Chloride		mg/L	See Permit Note	Composite	
Hardness, Total as CaCO ₃		mg/L	See Permit Note	Composite	
Copper, Total Recoverable		ug/L	See Permit Note	Composite	
Zinc, Total Recoverable		ug/L	See Permit Note	Composite	
Acute WET		TUa	See Permit Note	Grab	
Chronic WET		TUc	See Permit Note	Grab	
PFAS		ng/L	Quarterly	Grab	

Changes from Previous Permit

Monitoring frequency for the following parameters has been increased from “Quarterly” to one sample every 4 days of active snow removal, up to 10 events:

- Flow Rate
- pH
- Phosphorus
- Propylene glycol
- TSS
- COD
- BOD5

Monitoring is now required for one sample every 4 days of active snow removal, up to 10 events for the following new parameter:

- Dissolved Oxygen (DO)

Monitoring is now required for one sample every 4 days of active snow removal, up to 6 events for the following new parameters:

- Chloride
- Chlorine
- Hardness
- Copper
- Zinc

pH limits are now included.

Acute WET Testing is now required for all outfalls 3x/deicing season, beginning in the 2023-2024 deicing season.

Chronic WET Testing is now required for spring snowmelt in 2024 and 2026.

Quarterly PFAS monitoring is now included for this outfall.

Explanation of Limits and Monitoring Requirements

For a complete explanation/justification of the water quality parameters, please see the summary explanation below for all three outfalls and also see Appendix B for a more detailed explanation.

5.2.3 Sample Point Number: 003- Oak Creek Tributary Runways

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
Flow Rate		MGD	See Permit Note	Estimated	
COD		mg/L	See Permit Note	Composite	
BOD5, Total		mg/L	See Permit Note	Calculated	
Suspended Solids, Total		mg/L	See Permit Note	Composite	
pH Field	Daily Max	9.0 su	See Permit	Grab	

Monitoring Requirements and Limitations					
Parameter	Limit Type	Limit and Units	Sample Frequency	Sample Type	Notes
			Note		
pH Field	Daily Min	6.0 su	See Permit Note	Grab	
Dissolved Oxygen		mg/L	See Permit Note	Grab	
Phosphorus, Total	Monthly Avg	1.0 mg/L	See Permit Note	Composite	Interim Limit.
Propylene glycol		mg/L	See Permit Note	Composite	
Chlorine, Total Residual		ug/L	See Permit Note	Grab	
Chloride		mg/L	See Permit Note	Composite	
Hardness, Total as CaCO ₃		mg/L	See Permit Note	Composite	
Copper, Total Recoverable		ug/L	See Permit Note	Composite	
Zinc, Total Recoverable		ug/L	See Permit Note	Composite	
Acute WET		TUa	See Permit Note	Grab	
Chronic WET		TUc	See Permit Note	Grab	
PFAS		ng/L	Quarterly	Grab	

Changes from Previous Permit

Monitoring frequency for the following parameters has been increased from “Quarterly” to one sample every 4 days of active snow removal, up to 10 events:

- Flow Rate
- pH
- Phosphorus
- Propylene glycol
- TSS
- COD
- BOD₅

Monitoring is now required for one sample every 4 days of active snow removal, up to 10 events for the following new parameter:

- Dissolved Oxygen (DO)

Monitoring is now required for one sample every 4 days of active snow removal, up to 6 events for the following new parameters:

- Chloride
- Chlorine
- Hardness
- Copper
- Zinc

pH limits are now included.

Acute WET Testing is now required for all outfalls 3x/deicing season, beginning in the 2023-2024 deicing season.

Chronic WET Testing is now required for outfall 003 and 007 for spring snowmelt for 2024 and 2026.

Quarterly monitoring is now required for the 33 PFAS compounds identified in the table above.

Explanation of Limits and Monitoring Requirements for Outfalls 001, 003, and 007

The most significant change to this portion of the permit is the increase in monitoring frequency from quarterly to one sample every 4 days of active snow removal, up to 10 events/deicing season for most parameters. The reason for this is the department believes that a larger data set needs to be built to properly characterize the effluent in order to make a determination on whether GMIA is causing or contributing to exceedances of water quality criteria. Additionally, the proposed monitoring strategy is more targeted to GMIA's deicing practices, and is intended to capture all major storm events throughout the deicing season.

5-day Biochemical Oxygen Demand (BOD5):

Based on significant concentrations of BOD5 detected in the effluent, the department has concerns about the potential impact on the receiving waterbodies. The primary concern is the lowering of the stream's dissolved oxygen levels. To determine whether the permittee has the potential to cause or contribute to non-attainment of the dissolved oxygen criteria, the department reviewed a 2000 study from USGS, *Aircraft and Runway Deicers at General Mitchell International Airport, Milwaukee, Wisconsin, USA. 1. Biochemical Oxygen Demand and Dissolved Oxygen in Receiving Streams*, which evaluated BOD and dissolved oxygen from GMIA and in the receiving stream during deicing events in 1996 to 1998. The study showed that during deicing events:

1. General Mitchell was discharging very high levels of BOD (~300 mg/L to >10,000 mg/L)
2. Instream BOD levels remained elevated up to 5 miles downstream (~100 mg/L to 700 mg/L). Reductions in BOD levels downstream may be accounted for by the increased dilution available downstream (i.e. BOD may not degrade significantly over this distance).
3. Despite high BOD levels, dissolved oxygen levels did not decrease significantly. Decreases in stream DO did not appear to be related to deicing events.

In order to verify the data referenced in the above report (that elevated BOD discharges associated with deicing activities are not negatively impacting dissolved oxygen levels downstream), the department is proposing DO monitoring at sampling point 601 to further assess whether the significant BOD levels in discharges from the airport are having a negative effect on dissolved oxygen levels in the receiving stream. Continued monitoring of BOD5 is also required to determine the extent to which BOD degrades downstream of the airport and what percent of the downstream BOD can be attributed to deicing activities. The dissolved oxygen monitoring is included in the proposed reissued permit in lieu of BOD limits to confirm that BOD limitations may not be necessary to ensure compliance with the dissolved oxygen standard.

In the interest of obtaining representative data, the permittee is authorized to sample for COD in lieu of BOD5 and then calculate an equivalent concentration of BOD5 based on an established relationship (see Appendix A).

Total Suspended Solids ("TSS") – TMDL Limits:

The Milwaukee River Basin TMDL includes wasteload allocations for TSS for outfalls 001 and 007. The goals of the TMDL will be implemented in this permit via percent reductions; this is due to the noncontinuous and storm-related nature of the discharges from these outfalls. Compliance will be achieved via implementation of best management

practices to reduce TSS loadings to the Kinnickinnic River. To verify that the BMPs are effective and the goals of the TMDL are being achieved, the permittee is expected to perform both monitoring and watershed modeling showing TSS reductions at outfalls 001 and 007 over time.

pH:

Water Quality-based effluent limits of 6.0 as a daily minimum and 9.0 as a daily maximum are proposed for pH for these outfalls in order to ensure that the receiving streams are not negatively impacted by the discharge. These limits are based on the water quality standards for fish and aquatic life found in s. NR 102.04(4)(c), Wis. Adm. Code.

Dissolved Oxygen (DO):

DO monitoring is proposed at all outfalls in order to compare levels in the effluent with downstream levels.

Total Residual Chlorine (TRC):

Permit application data showed a significant chlorine level for Outfall 003. Since GMIA does not add chlorine to any waste stream or runoff, it's unclear what the reason is for the high chlorine measurement at Outfall 003. Chlorine may be coming from the chlorinated city water used to dilute glycol prior to application or the high result may be caused by some method interference. Additional sampling is proposed to determine if the previous result was representative. It's important to note that samples taken at Outfall 007 and 701 should be paired.

Phosphorus (TMDL Limits):

The Milwaukee River Basin TMDL includes wasteload allocations for phosphorus for outfalls 001 and 007. The goals of the TMDL will be implemented in this permit through this permit by way of phosphorus limits for these outfalls. These limits will go into effect per the compliance schedule.

Because Outfall 003 is not part of the MKE River Basin TMDL, effluent limitations of 0.075 mg/L (6-month average) and 0.225 mg/L (monthly average) will go into effect per the compliance schedule, pursuant to ch. NR 217, Wis. Adm. Code. Because the permittee is not currently able to meet these limits, a limit of 1.0 mg/L as a monthly average will be effective in the interim.

The department originally considered regulating phosphorus discharges from these Outfalls through the implementation of best management practices to achieve the phosphorus WLAs in the TMDL. Compliance with the TMDL WLAs would then be assessed by determining the percent reductions of phosphorus discharges to the watershed over time. However, sampling of various Type I and Type IV ADFs showed that there are potentially significant levels of phosphorus in these deicers, which means that GMIA is adding phosphorus to their industrial wastewater, thus prompting the need for limits.

Propylene Glycol:

Propylene glycol monitoring is proposed for all outfalls in order to track how much PG is making its way into the sewer system. Additionally, this paired monitoring with Sampling Point 601 will inform the department as to the fate of PG downstream of the airport.

Chloride:

GMIA does not use chloride-containing anti-icers or deicers on site. However, since there have been significant detectable concentrations in the effluent submitted with the permit application, monitoring during 6 qualifying deicing events is proposed to track chloride levels over time. Monitoring is also proposed for influent sampling point 701 in order to ensure that chloride is not originating from the airport. It's important to note that samples taken at Outfall 007 and 701 should be paired.

Hardness, Copper, and Zinc:

The primary reason for monitoring for Copper and Zinc is the single sample results submitted with the permit application would typically require WQBELs. However, it's undetermined if these metals originated within the permitting boundaries or outside of the airport. Therefore, paired monthly monitoring (during deicing season) with influent sampling point 701 is

proposed in order to determine if GMIA is causing or contributing to an exceedance of water quality criteria. Additionally, hardness monitoring is proposed due to the relationship between hardness and metals toxicity.

Acute WET:

Acute tests predict the concentration that causes lethality of aquatic organisms during a 48 to 96-hour exposure. To assure that a discharge is not acutely toxic to organisms in the receiving water, WET tests must produce a statistically valid LC50 (Lethal Concentration to 50% of the test organisms) greater than 100% effluent. In order to ensure that the airport's deicing discharges are not having a toxic effect on the receiving streams, the permittee is required to develop and implement an acute WET testing sampling plan. The permittee is given a year to develop this plan for all three outfalls based on the anticipated difficulty in collecting representative deicing runoff samples during storm events. The WET tests must isolate runoff and cannot be conducted in-stream.

Chronic WET:

Chronic tests predict the concentration that interferes with the growth or reproduction of test organisms during a seven-day exposure. To assure that a discharge is not chronically toxic to organisms in the receiving water, WET tests must produce a statistically valid IC25 (Inhibition Concentration) greater than the instream waste concentration (IWC). The IWC is an estimate of the proportion of effluent to total volume of water (receiving water + effluent). Because the 7-Q10 estimates in both receiving waters are zero, the IWC is 100% for Outfalls 003 and 007. Because the only anticipated discharge event for runoff from the airport that last 4 or more days is a melting event, the permittee is required to perform chronic WET testing on spring snowmelt twice during the next permit term. The WET tests must isolate runoff and cannot be conducted in-stream. Because Outfall 001 is not expected to have enough flow for 4 days to collect a chronic WET test sample, that outfall is excluded from this requirement.

Per-and Polyfluoroalkyl Substances (PFAS):

Based on monitoring data obtained through permit application sampling, there appears to be significant levels of PFAS being discharged through GMIA's permitted outfalls. Pursuant to s. NR 102.04(1)(d), Wis. Adm. Code, substances in concentrations or combinations which are toxic or harmful to humans shall not be present in amounts found to be of public health significance, nor shall substances be present in amounts which are acutely harmful to animal, plant or aquatic life.

Though the original source of the PFAS contamination is unknown, the department is aware of firefighting exercises occurring which discharged PFAS-containing aqueous film-forming foam to the groundwater. In order to reduce potential impacts to human health and the environment, this permit is requiring that GMIA develop and implement PFAS best management practices (BMPs) in order to minimize the amount of PFAS in the effluent. Quarterly monitoring is proposed in order to evaluate the effectiveness of the BMPs over time. There is also a requirement to report additional monitoring data on the annual PFAS BMP status update.

The Wastewater Program recognizes that the Remediation and Redevelopment program is continuing their efforts with GMIA to reduce PFAS levels in the groundwater. However, this permit is requiring different actions in an attempt to keep PFAS levels in the effluent lower. Over time, if there is no decrease in PFAS levels in the effluent and the department has promulgated water quality standards, treatment may be required.

As of January 2022, this is the following list of PFAS required to be sampled for:

1. PFBA (Perfluorobutanoic acid)
2. PFPeA (Perfluoropentanoic acid)
3. PFHxA (Perfluorohexanoic acid)
4. PFHpA (Perfluoroheptanoic acid)
5. PFOA (Perfluorooctanoic acid)\
6. PFNA (Perfluorononanoic acid)

7. PFDA (Perfluorodecanoic acid)
8. PFUnA (Perfluoroundecanoic acid)
9. PFDoA (Perfluorododecanoic acid)
10. PFTTrDA aka PFTriA (Perfluorotridecanoic acid)
11. PFTA aka PFTeDA (Perfluorotetradecanoic acid)
12. PFBS (Perfluorobutanesulfonic acid)
13. PFPeS (Perfluoropentanesulfonic acid)
14. PFHxS (Perfluorohexanesulfonic acid)
15. PFHpS (Perfluoroheptanesulfonic acid)
16. PFOS (Perfluorooctanesulfonic acid)
17. PFNS (Perfluorononanesulfonic acid)
18. PFDS (Perfluorodecanesulfonic acid)
19. PFDoS (Perfluorododecanesulfonic acid)
20. 4:2 FTS (4:2 fluorotelomersulfonic acid)
21. 6:2 FTS (6:2 fluorotelomersulfonic acid)
22. 8:2 FTS (8:2 fluorotelomersulfonic acid)
23. PFOSA (Perfluorooctanesulfonamide)
24. NMeFOSA (N-Methylperfluorooctanesulfonamide)
25. NEtFOSA (N-Ethylperfluorooctanesulfonamide)
26. NMeFOSAA (N-Methylperfluorooctanesulfonamidoacetic acid)
27. NEtFOSAA (N-Ethylperfluorooctanesulfonamidoacetic acid)
28. NMeFOSE (N-Methylperfluorooctanesulfonamidoethanol)
29. NEtFOSE (N-Ethylperfluorooctanesulfonamidoethanol)
30. HFPO-DA (Hexafluoropropylene oxide dimer acid)
31. DONA (4,8-dioxa-3H-perfluorononanoic acid)
32. 9Cl-PF3ONS aka F-53B Major (9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid)
33. 11Cl-PF3OUdS aka F-53B Minor (11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid)

6 Schedules

6.1 SWPPP

Required Action	Due Date
Update SWPPP: The permittee shall update the Storm Water Pollution Prevention Plan to include updated requirements of this WPDES permit and submit to the department for review.	09/30/2023

6.2 WET Testing Protocol Determination

Required Action	Due Date
Submit WET Testing Plan: The permittee shall develop and submit to the department for approval a WET testing protocol for both acute and chronic WET tests.	04/30/2023
Update WET Testing Protocol: If the department determines that the WET testing protocol is insufficient in capturing the toxicity of the effluent, the permittee shall update the protocol and submit to the department for approval.	09/30/2023

6.3 End of Season Annual Summary

Required Action	Due Date
End of Season Annual Summary: The permittee shall submit for department review the End of Season Annual Summary in accordance with the requirements of the WPDES permit which was effective during the 2021-2022 deicing season.	09/30/2022
End of Season Annual Summary #2: The permittee shall submit for department review the End of Season Annual Summary, which must contain at least all of the required information in sections 2.3, 3.1, 3.3, 3.5 and subsections 5.2.4.10 and 6.2.3.2.	09/30/2023
End of Season Annual Summary #3: The permittee shall submit for department review the End of Season Annual Summary, which must contain at least all of the required information in sections 2.3, 3.1, 3.3, 3.5 and subsections 5.2.4.10 and 6.2.3.2.	09/30/2024
End of Season Annual Summary #4: The permittee shall submit for department review the End of Season Annual Summary, which must contain at least all of the required information in sections 2.3, 3.1, 3.3, 3.5 and subsections 5.2.4.10 and 6.2.3.2.	09/30/2025
End of Season Annual Summary #5: The permittee shall submit for department review the End of Season Annual Summary, which must contain at least all of the required information in sections 2.3, 3.1, 3.3, 3.5 and subsections 5.2.4.10 and 6.2.3.2.	09/30/2026
Ongoing End of Season Annual Summaries: in the event this WPDES permit is not reissued by the expiration date, the permittee shall continue to submit End of Season Annual Summaries in accordance with section 3.5.	

6.4 PFAS BMP Plan

The permittee is required to develop and implement a Best Management Practices (BMP) plan to address the loadings of PFAS in the discharge.

Required Action	Due Date
Develop BMP Plan: The permittee is required to develop and implement a PFAS BMP plan to identify the sources of PFAS in the discharge and report findings to the WDNR.	12/31/2022
BMP Plan Implementation Status Report: The permittee shall submit a status report on the implementation of the PFAS BMP plan.	09/30/2023
BMP Plan Implementation Status Report #2: The permittee shall submit a status report on the implementation of the PFAS BMP plan.	09/30/2024
BMP Plan Implementation Status Report #3: The permittee shall submit a status report on the implementation of the PFAS BMP plan.	09/30/2025
BMP Plan Implementation Status Report #4: The permittee shall submit a status report on the implementation of the PFAS BMP plan.	09/30/2026
Ongoing BMP Status Reports: In the event that this permit is not reissued by the permit expiration date, the permittee shall continue to submit ongoing BMP status reports by September 30th each year.	

6.5 Prohibited Discharge Inspections

Required Action	Due Date
Preliminary Prohibited Discharge Inspection Report: The methods for determining onsite prohibited discharges shall be identified in preliminary report explaining how the evaluation will be completed, the equipment used for investigation and the rationale for investigatory methods.	09/30/2022
Prohibited Discharge Inspection Report: The permittee shall evaluate all storm water outfalls for prohibited contributions and illicit connections. Methods may include a review of as-built schematics or drainage plans of the storm water collection system, end of pipe screening during dry weather, dye testing, physical inspection of the storm water collection system, or other appropriate monitoring. The results of this inspection shall be summarized and submitted to the department.	09/30/2023
Prohibited Discharge Inspection Report #2: The permittee shall evaluate all storm water outfalls for prohibited contributions and illicit connections. Methods may include a review of as-built schematics or drainage plans of the storm water collection system, end of pipe screening during dry weather, dye testing, physical inspection of the storm water collection system, or other appropriate monitoring. The results of this inspection shall be summarized and submitted to the department.	09/30/2024
Prohibited Discharge Inspection Report #3: The permittee shall evaluate all storm water outfalls for prohibited contributions and illicit connections. Methods may include a review of as-built schematics or drainage plans of the storm water collection system, end of pipe screening during dry weather, dye testing, physical inspection of the storm water collection system, or other appropriate monitoring. The results of this inspection shall be summarized and submitted to the department.	09/30/2025
Prohibited Discharge Inspection Report #4: The permittee shall evaluate all storm water outfalls for prohibited contributions and illicit connections. Methods may include a review of as-built schematics or drainage plans of the storm water collection system, end of pipe screening during dry weather, dye testing, physical inspection of the storm water collection system, or other appropriate monitoring. The results of this inspection shall be summarized and submitted to the department.	09/30/2026

Ongoing Prohibited Discharge Inspections: In the event this WPDES permit is not reissued by the expiration date, the permittee shall continue to submit Prohibited Water Discharge Inspection Reports by September 30th annually.

6.6 Water Quality Based Effluent Limits (WQBELs) for Phosphorus (001, 003, and 007)

The permittee shall comply with the WQBELs for Outfall 003 and the WLAs for Outfalls 001 and 007. No later than 14 days following each compliance date, the permittee shall notify the Department in writing of its compliance or noncompliance.

Required Action	Due Date
<p>Operational Evaluation Report: The permittee shall prepare and submit to the Department for approval an operational evaluation report. The report shall include an evaluation of collected effluent data, possible source reduction measures, operational improvements or other minor facility modifications that will optimize reductions in phosphorus discharges during the period prior to complying with final phosphorus WQBELs/WLAs and, where possible, enable compliance with final phosphorus WQBELs/WLAs by 05/01/2025. The report shall provide a plan and schedule for implementation of the measures, improvements, and modifications as soon as possible, but not later than 05/01/2025 and state whether the measures, improvements, and modifications will enable compliance with final phosphorus WQBELs/WLAs. Regardless of whether they are expected to result in compliance, the permittee shall implement the measures, improvements, and modifications in accordance with the plan and schedule specified in the operational evaluation report.</p> <p>If the operational evaluation report concludes that the facility can achieve final phosphorus WQBELs using the existing treatment system with only source reduction measures, operational improvements, and minor facility modifications, the permittee shall comply with the final phosphorus WQBELs/WLAs by 05/01/2025 and is not required to comply with the milestones identified below for years 3 through 7 of this compliance schedule ('Preliminary Compliance Alternatives Plan', 'Final Compliance Alternatives Plan', 'Final Plans and Specifications', 'Treatment System Upgrade to Meet WQBELs/WLAs', 'Complete Construction', 'Achieve Compliance').</p> <p>STUDY OF FEASIBLE ALTERNATIVES - If the Operational Evaluation Report concludes that the permittee cannot achieve final phosphorus WQBELs/WLAs with source reduction measures, operational improvements and other minor facility modifications, the permittee shall initiate a study of feasible alternatives for meeting final phosphorus WQBELs/WLAs and comply with the remaining required actions of this schedule of compliance. If the Department disagrees with the conclusion of the report, and determines that the permittee can achieve final phosphorus WQBELs/WLAs using only source reduction measures, operational improvements, and minor facility modifications, the Department may reopen and modify the permit to include an implementation schedule for achieving the final phosphorus WQBELs/WLAs sooner than 05/01/2029.</p>	09/30/2023
<p>Compliance Alternatives, Source Reduction, Improvements and Modifications Status: The permittee shall submit a 'Compliance Alternatives, Source Reduction, Operational Improvements and Minor Facility Modification' status report to the Department. The report shall provide an update on the permittee's: (1) progress implementing source reduction measures, operational improvements, and minor facility modifications to optimize reductions in phosphorus discharges and, to the extent that such measures, improvements, and modifications will not enable compliance with the WQBELs, (2) status evaluating feasible alternatives for meeting phosphorus WQBELs/WLAs.</p>	09/30/2024
<p>Preliminary Compliance Alternatives Plan: The permittee shall submit a preliminary compliance alternatives plan to the Department.</p>	03/31/2025

<p>If the plan concludes upgrading of the permittee's facility is necessary to achieve final phosphorus WQBELs/WLAs, the submittal shall include a preliminary engineering design report.</p> <p>If the plan concludes Adaptive Management will be used, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 without the Adaptive Management Plan.</p> <p>If water quality trading will be undertaken, the plan must state that trading will be pursued.</p>	
<p>Final Compliance Alternatives Plan: The permittee shall submit a final compliance alternatives plan to the Department.</p> <p>If the plan concludes upgrading of the permittee's facility is necessary to meet final phosphorus WQBELs/WLAs, the submittal shall include a final engineering design report addressing the treatment upgrades.</p> <p>If the plan concludes Adaptive Management will be implemented, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 and an engineering report addressing any treatment system upgrades necessary to meet interim limits pursuant to s. NR 217.18, Wis. Adm. Code.</p> <p>If the plan concludes water quality trading will be used, the submittal shall identify potential trading partners.</p> <p>Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	09/30/2025
<p>Progress Report on Plans & Specifications: Submit progress report regarding the progress of preparing final plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	03/31/2026
<p>Final Plans and Specifications: Unless the permit has been modified, revoked and reissued, or reissued to include Adaptive Management or Water Quality Trading measures or to include a revised schedule based on factors in s. NR 217.17, Wis. Adm. Code, the permittee shall submit final construction plans to the Department for approval pursuant to s. 281.41, Stats., specifying treatment upgrades that must be constructed to achieve compliance with final phosphorus WQBELs/WLAs, and a schedule for completing construction of the upgrades by the complete construction date specified below. (Note: Permit modification, revocation and reissuance, and reissuance are subject to s. 283.53(2), Stats.)</p> <p>Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	09/30/2026
<p>Treatment System Upgrades to Meet WQBELs/WLAs: The permittee shall initiate construction of the upgrades. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41, Stats. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.</p>	09/30/2027
<p>Construction Upgrade Progress Report #1: The permittee shall submit a progress report on construction upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL/WLA Compliance' in the Surface Water section of this permit.</p>	03/31/2028
<p>Construction Upgrade Progress Report #2: The permittee shall submit a progress report on construction upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL/WLA Compliance' in the Surface Water section of this permit.</p>	09/30/2028

Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL/WLA Compliance' in the Surface Water section of this permit.	04/30/2029
Achieve Compliance: The permittee shall achieve compliance with final phosphorus WQBELs. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	05/01/2029

6.7 Total Suspended Solids - TMDL Derived WQBELs for TSS (001 and 007)

The permittee shall comply with the TMDL (Total Maximum Daily Load) derived WQBELs (Water Quality Based Effluent Limits) for TSS as specified.

Required Action	Due Date
<p>Operational Evaluation Report: The permittee shall prepare and submit to the Department for approval an operational evaluation report. The report shall include an evaluation of collected effluent data, possible source reduction measures, operational improvements or other minor facility modifications that will optimize reductions in TSS discharges during the period prior to complying with final TSS WQBELs and, where possible, enable compliance with final TSS WQBELs by 05/01/2025. The report shall provide a plan and schedule for implementation of the measures, improvements, and modifications as soon as possible, but not later than 05/01/2025 and state whether the measures, improvements, and modifications will enable compliance with final TSS WQBELs. Regardless of whether they are expected to result in compliance, the permittee shall implement the measures, improvements, and modifications in accordance with the plan and schedule specified in the operational evaluation report.</p> <p>If the operational evaluation report concludes that the facility can achieve final TSS WQBELs using the existing system with only source reduction measures, operational improvements, and minor facility modifications, the permittee shall comply with the final TSS WQBEL by 05/01/2025 and is not required to comply with the milestones identified below for years 3 through 7 of this compliance schedule ("Preliminary Compliance Alternatives Plan", "Final Compliance Alternatives Plan", "Final Plans and Specifications", "Treatment Upgrades to Meet WQBELs", "Complete Construction", "Achieve Compliance").</p> <p>STUDY OF FEASIBLE ALTERNATIVES - If the Operational Evaluation Report concludes that the permittee cannot achieve final TSS WQBELs with source reduction measures, operational improvements and other minor facility modifications, the permittee shall initiate a study of feasible alternatives for meeting final TSS WQBELs and comply with the remaining required actions of this schedule of compliance. If the Department disagrees with the conclusion of the report, and determines that the permittee can achieve final TSS WQBELs with only source reduction measures, operational improvements, and minor facility modifications, the Department may reopen and modify the permit to include an implementation schedule for achieving the final TSS WQBELs sooner than 05/01/2029.</p>	09/30/2023
<p>Compliance Alternatives, Source Reduction, Improvements and Modifications Status: The permittee shall submit a 'Compliance Alternatives, Source Reduction, Operational Improvements and Minor Facility Modification' status report to the Department. The report shall provide an update on the permittee's: (1) progress implementing source reduction measures, operational improvements, and minor facility modifications to optimize reductions in TSS discharges and, to the extent that such measures, improvements, and modifications will not enable compliance with the WQBELs, (2) status evaluating feasible alternatives for meeting TSS WQBELs.</p>	09/30/2024
<p>Preliminary Compliance Alternatives Plan: The permittee shall submit a preliminary compliance</p>	03/31/2025

<p>alternatives plan to the Department.</p> <p>If the plan concludes upgrading of the permittee's facility is necessary to achieve final TSS WQBELs, the submittal shall include a preliminary engineering design report.</p> <p>If the plan concludes Adaptive Management will be used, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 without the Adaptive Management Plan.</p> <p>If water quality trading will be undertaken, the plan must state that trading will be pursued.</p>	
<p>Final Compliance Alternatives Plan: The permittee shall submit a final compliance alternatives plan to the Department.</p> <p>If the plan concludes upgrading of the permittee's system is necessary to meet final TSS WQBELs, the submittal shall include a final engineering design report addressing the treatment plant upgrades, and a facility plan if required pursuant to ch. NR 110.</p> <p>If the plan concludes Adaptive Management will be implemented, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 and an engineering report addressing any treatment system upgrades necessary to meet interim limits.</p> <p>If the plan concludes water quality trading will be used, the submittal shall identify potential trading partners.</p> <p>Alternative Approaches: Rather than upgrading the wastewater treatment facility to comply with WQBELs for TSS, the permittee may use Water Quality Trading or the Adaptive Management Option to achieve compliance, provided that the permit is modified, revoked and reissued, or reissued to incorporate any such alternative approach. If the Final Compliance Alternatives Plan concludes that a variance will be pursued, the Plan shall provide information regarding the basis for the variance.</p>	09/30/2025
<p>Progress Report on Plans & Specifications: Submit progress report regarding the progress of preparing final plans and specifications.</p> <p>Note: See 'Alternative Approaches' above.</p>	03/31/2026
<p>Final Plans and Specifications: Unless the permit has been modified, revoked and reissued, or reissued to include Water Quality Trading measures the permittee shall submit final construction plans to the Department for approval pursuant to s. 281.41, Stats., specifying system upgrades that must be constructed to achieve compliance with final TSS WQBELs, and a schedule for completing construction of the upgrades by the complete construction date specified below. (Note: Permit modification, revocation and reissuance, and reissuance is subject to s. 283.53(2) Stats.)</p> <p>Note: See 'Alternative Approaches' above.</p>	09/30/2026
<p>Treatment Upgrades to Meet WQBELs: The permittee shall initiate construction of the upgrades. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41, Stats. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications.</p> <p>Note: See 'Alternative Approaches' above.</p>	09/30/2027
<p>Construction Upgrade Progress Report #1: The permittee shall submit a progress report on construction upgrades.</p> <p>Note: See 'Alternative Approaches' above.</p>	03/31/2028
<p>Construction Upgrade Progress Report #2: The permittee shall submit a progress report on</p>	09/30/2028

construction upgrades. Note: See 'Alternative Approaches' above.	
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades. Note: See 'Alternative Approaches' above.	04/30/2029
Achieve Compliance: The permittee shall achieve compliance with final TSS WQBELs. Note: See 'Alternative Approaches' above.	05/01/2029

Explanation of Compliance Schedules

Schedule 7.1 is included in order to ensure that GMIA incorporates permit changes into the SWPPP.

Schedule 7.2 is included to give the permittee time to both develop a WET testing plan and update it based on potential department comments.

Schedule 7.3 is included to ensure that GMIA is complying with the requirements of this WPDES permit.

Schedule 7.4 is included to track GMIA's progress in reducing PFAS discharges from the airport runoff.

Schedule 7.5 is included to ensure that GMIA is regularly inspecting the airport's storm sewer system for prohibited discharges.

Schedule 7.6 is included to allow GMIA time to comply with the applicable phosphorus WLAs for Outfalls 001 and 007 and WQBELs for Outfall 003.

Attachments:

Appendix A: eDMR Data 2015 – 2020

Appendix B: WQBEL Memo

Appendix C: PFAS Data Submitted with Permit Application

Proposed Expiration Date:

04/30/2027

Prepared By:

Nate Willis

Wastewater Engineer

Bureau of Water Quality

Date:

01/27/2022

cc:

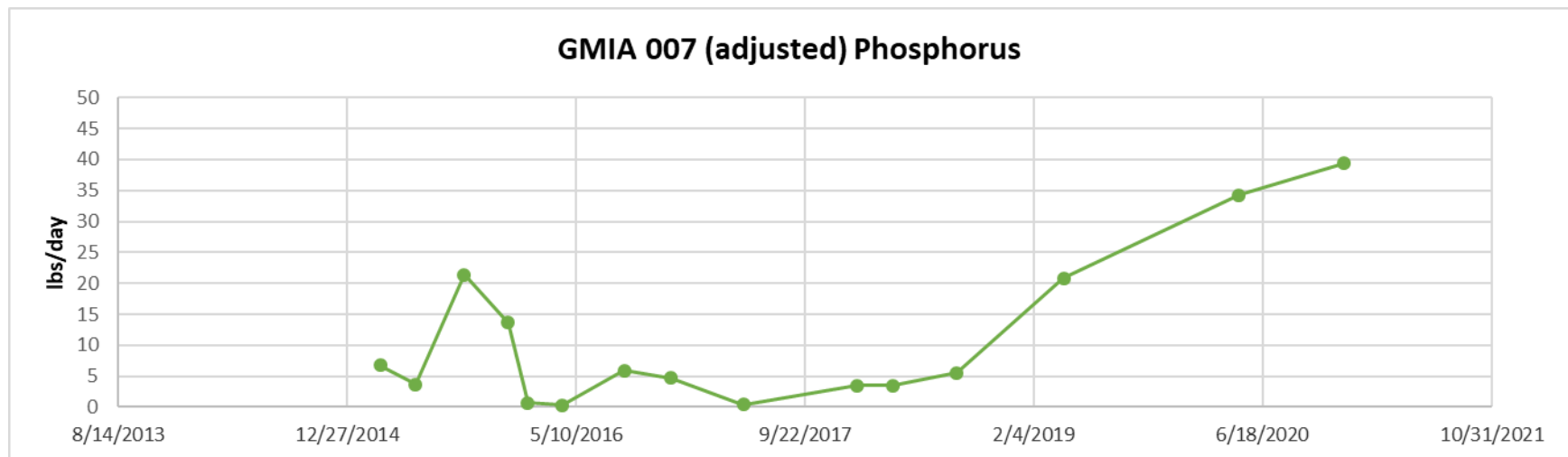
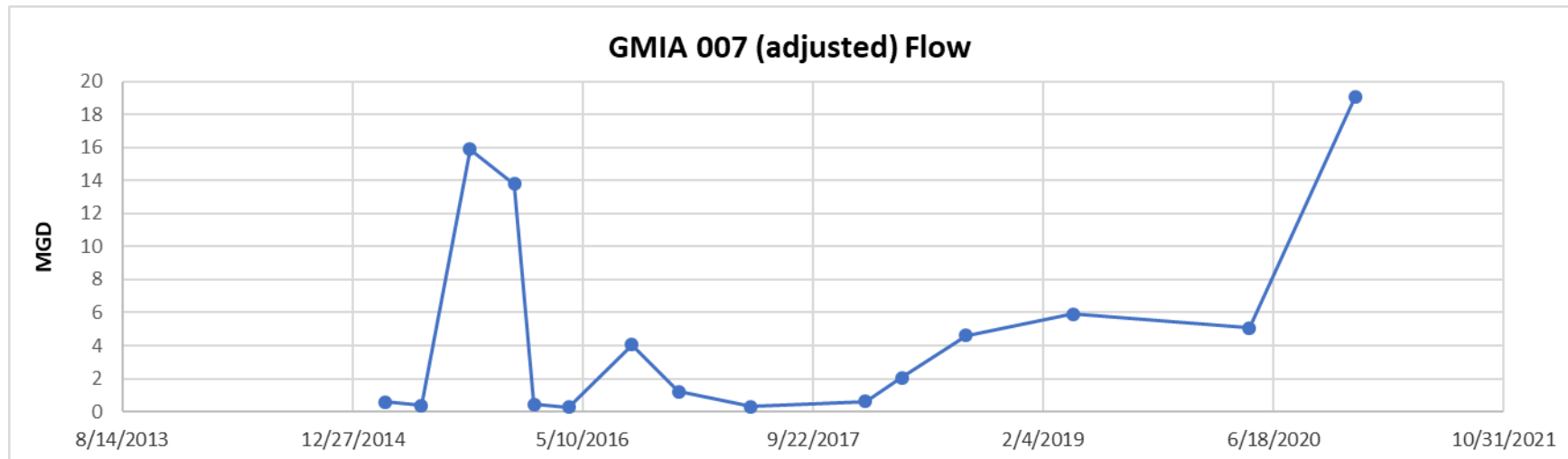
Jacob Wedesky, *WDNR*

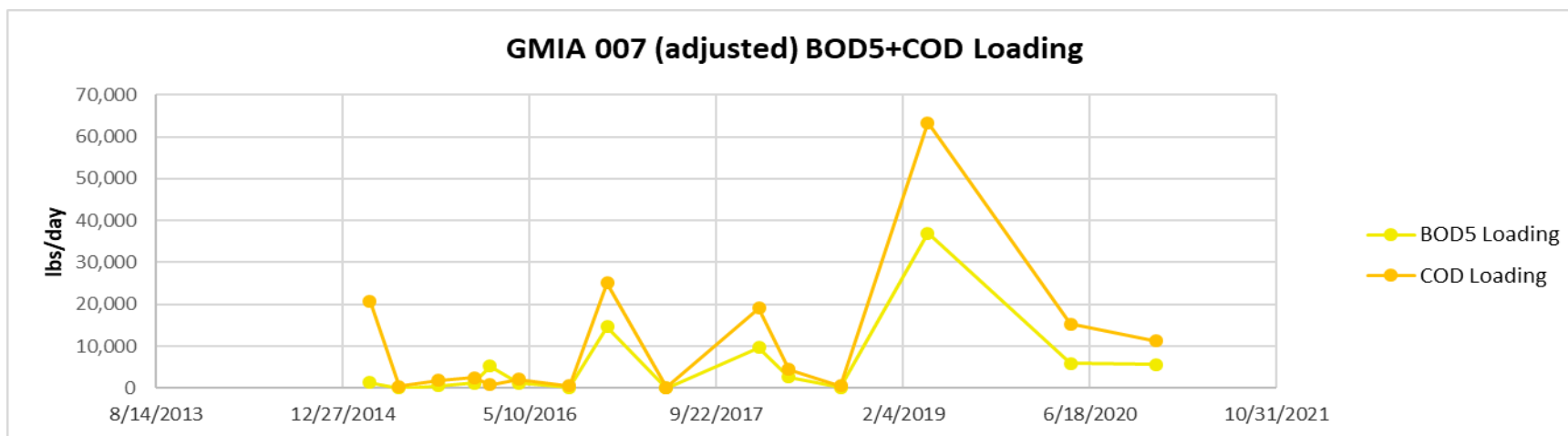
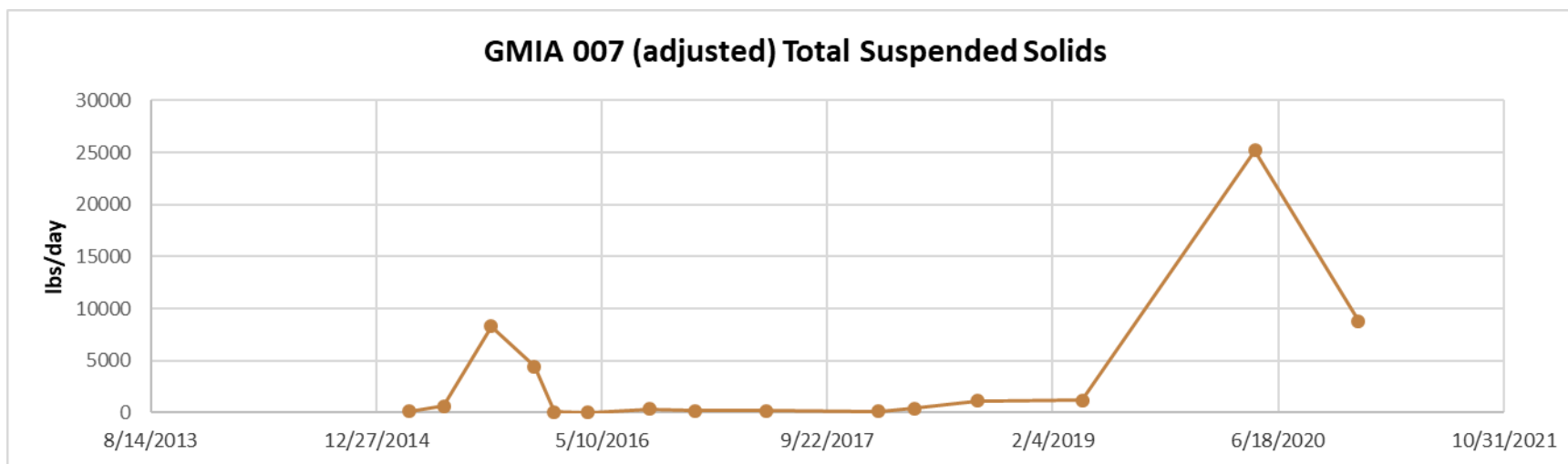
APPENDIX A

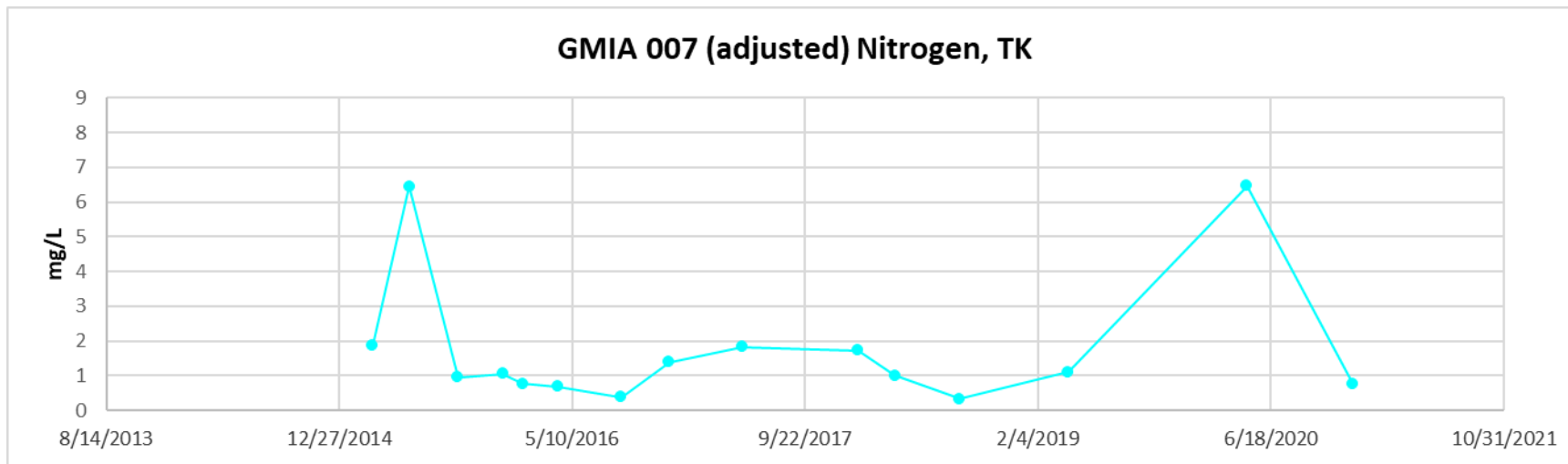
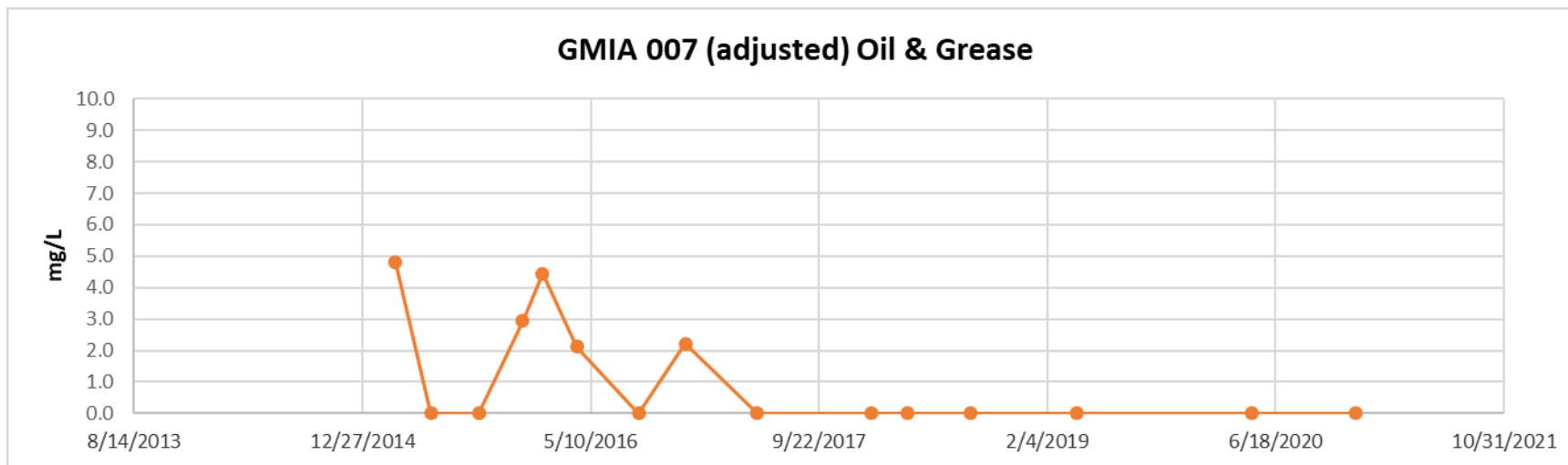
EDMR DATA 2015 - 2020

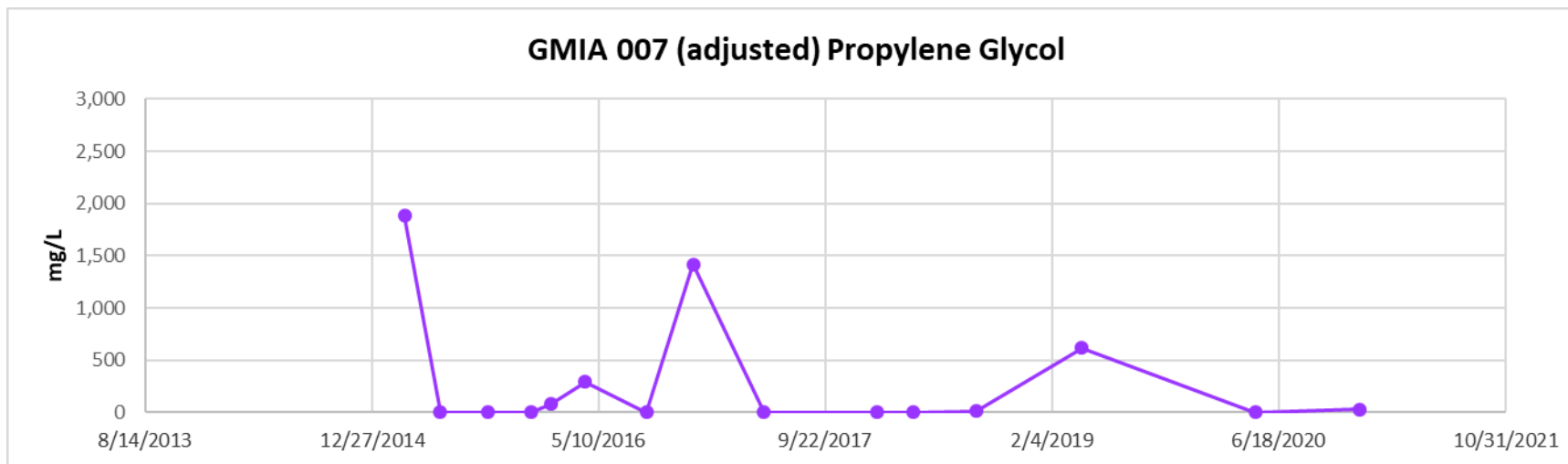
007/701:

Note: “adjusted” data subtracts Sampling Point 701 mass from Outfall 007 reported mass, accounting for flow rates to determine that particular pollutant’s loadings from the drainage area inside the airport’s permitted boundaries. This data excludes sampling data for which Sampling Point 701’s data was taken on a different day than Outfall 007’s data.

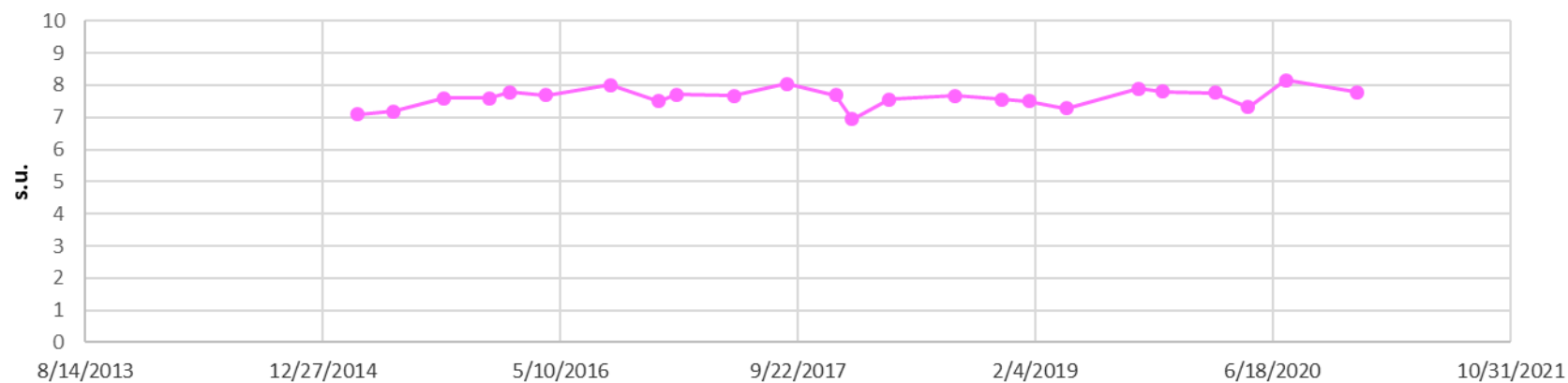




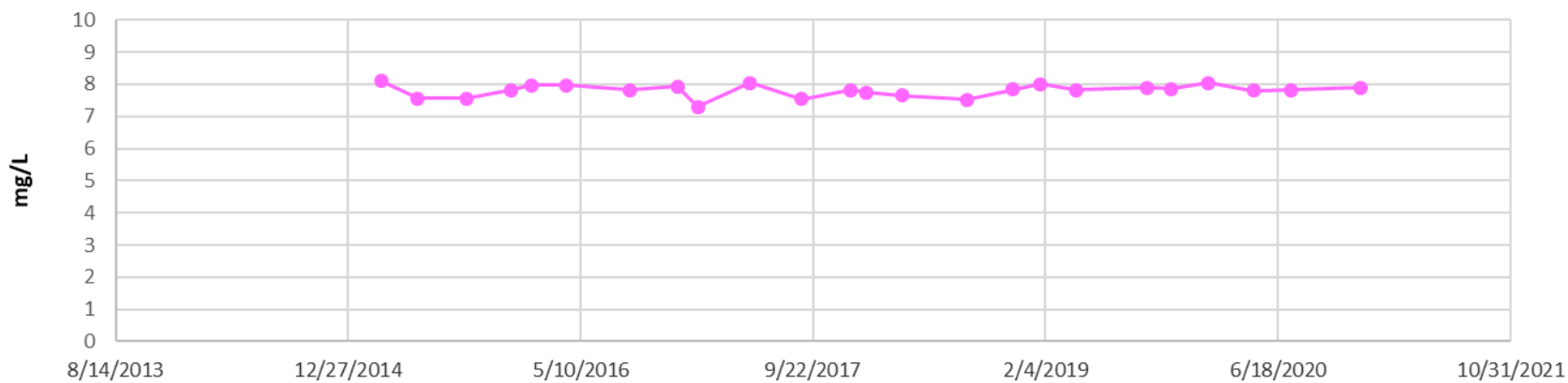




GMIA 007 pH



GMIA 701 pH

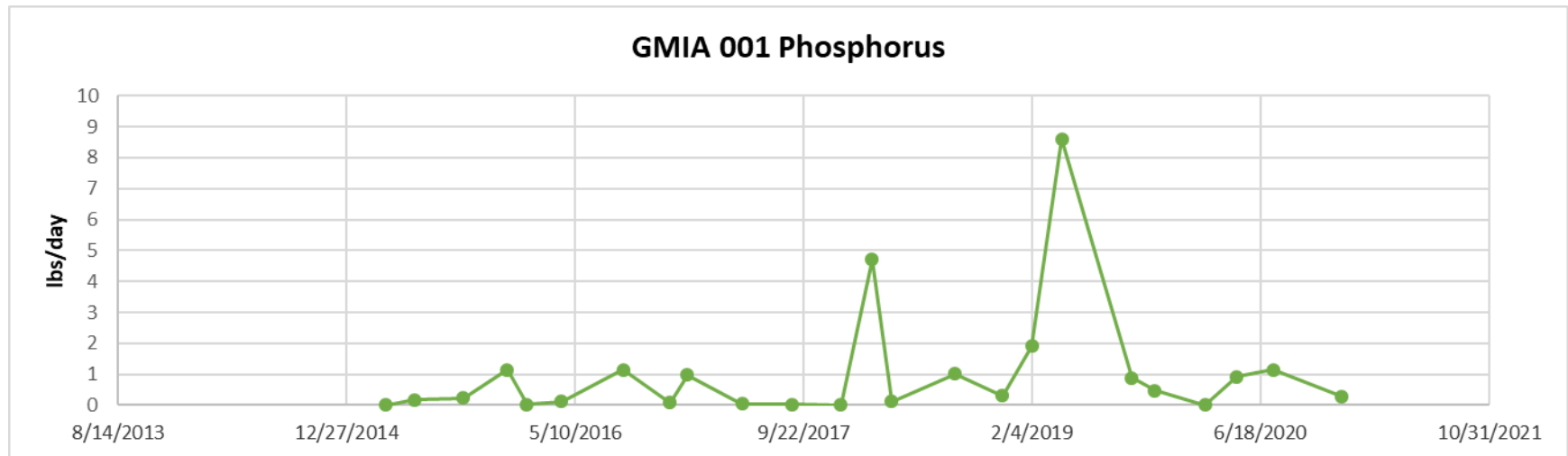
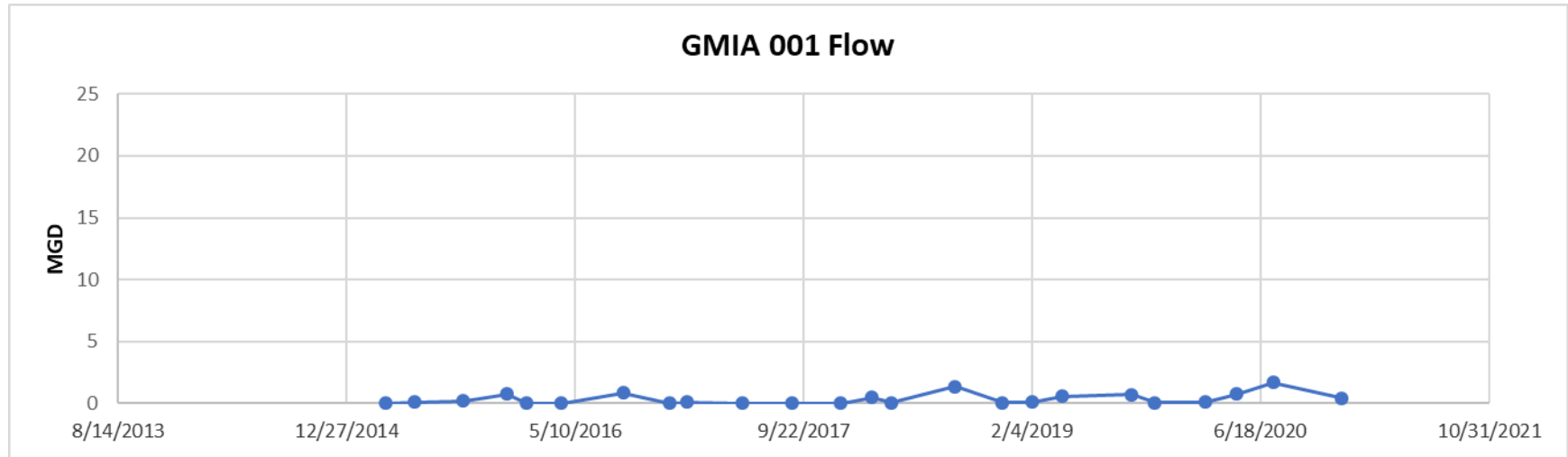


007 Data Tables (adjusted with 701 data):

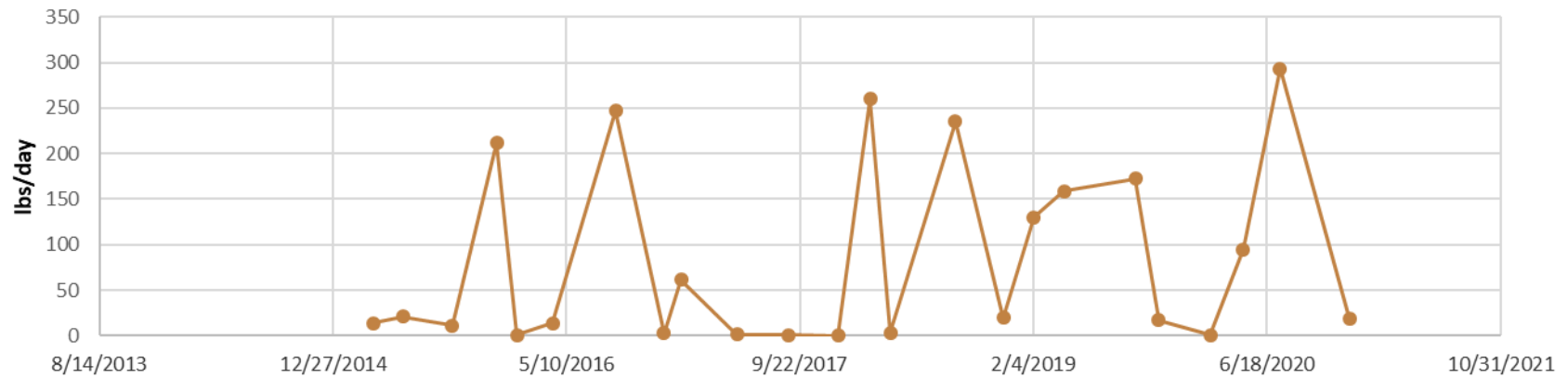
Date	BOD5 (mg/L)	COD (mg/L)	Flow (MGD)	TSS (mg/L)	P (mg/L)	O&G (mg/L)	N, TK (mg/L)	PG (mg/L)
3/9/2015	270	4297	0.58	27	1.393	4.8	1.875	1,883
5/26/2015	32	144	0.39	200	1.136	0	6.441	0
9/8/2015	5	14	15.88	62	0.161	0	0.959	0
12/13/2015	10	23	13.79	39	0.119	2.9	1.059	0
1/25/2016	1385	222	0.46	15	0.172	4.4	0.768	78
4/10/2016	563	954	0.26	17	0.161	2.1	0.686	292
8/24/2016	4	15	4.04	10	0.174	0	0.381	0
12/4/2016	1454	2492	1.21	21	0.467	2.2	1.391	1,418
5/10/2017	38	73	0.3	74	0.157	0	1.836	0
1/14/2018	1822	3574	0.64	26	0.649	0	1.735	0
4/3/2018	158	259	2.05	23	0.206	0	1.008	0
8/20/2018	4	14	4.6	30	0.144	0	0.335	15
4/10/2019	750	1286	5.91	24	0.422	0	1.100	617
4/27/2020	139	362	5.06	597	0.813	0	6.458	0
12/12/2020	36	71	19.03	56	0.248	0	0.754	29
Avg	444.7	920.0	4.9	81.5	0.4	1.1	1.8	288.9
Max	1822.5	4297.2	19.0	597.4	1.4	4.8	6.5	1882.8
Min	4.1	14.0	0.3	10.3	0.1	0.0	0.3	0.0

Date	BOD5 (lbs/day)	COD (lbs/day)	TSS (lbs/day)	P (lbs/day)	O&G (lbs/day)	N, TK (lbs/day)	PG (lbs/day)
3/9/2015	1,304	20,787	130	7	23	9.069	9107
5/26/2015	105	467	651	4	0	20.950	0
9/8/2015	598	1,849	8275	21	0	126.950	0
12/13/2015	1,172	2,589	4447	14	338	121.763	0
1/25/2016	5,314	852	59	1	17	2.945	300
4/10/2016	1,221	2,069	37	0	5	1.488	634
8/24/2016	140	504	347	6	0	12.852	0
12/4/2016	14,669	25,145	215	5	22	14.039	14311
5/10/2017	96	181	185	0	0	4.592	0
1/14/2018	9,728	19,079	139	3	0	9.262	13001
4/3/2018	2,707	4,420	398	4	0	17.240	784
8/20/2018	156	545	1154	6	0	12.840	559
4/10/2019	36,950	63,392	1175	21	0	54.195	30424
4/27/2020	5,875	15,295	25211	34	0	272.538	0
12/12/2020	5,717	11,227	8814	39	0	119.709	4678
Avg	5716.8	11226.8	3415.8	11.0	27.0	53.4	4920.0
Max	36950.1	63392.0	25211.2	39.4	338.0	272.5	30424.3
Min	95.8	181.5	36.8	0.4	0.0	1.5	0.0

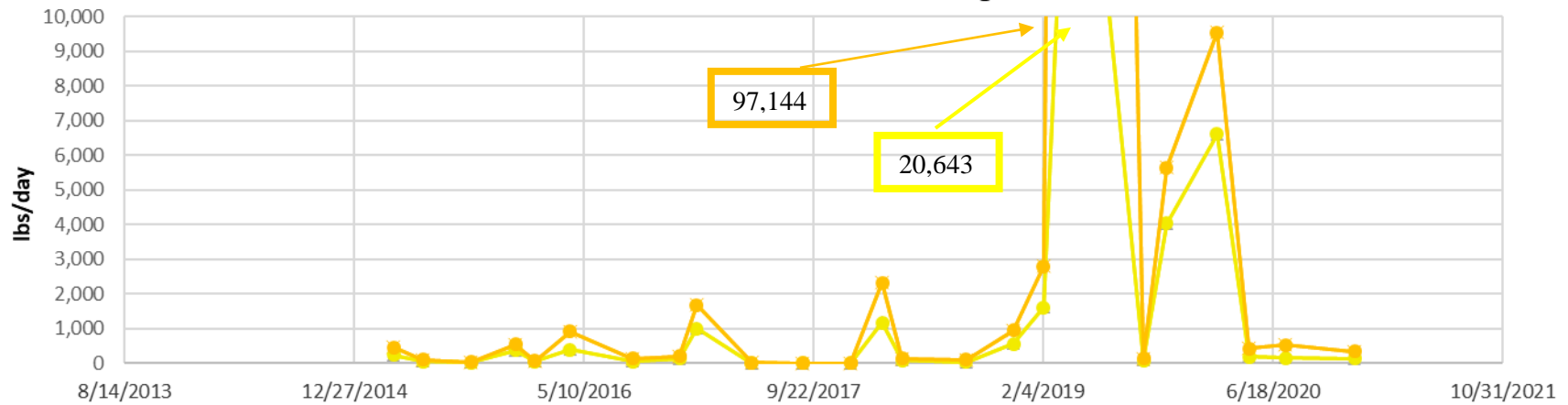
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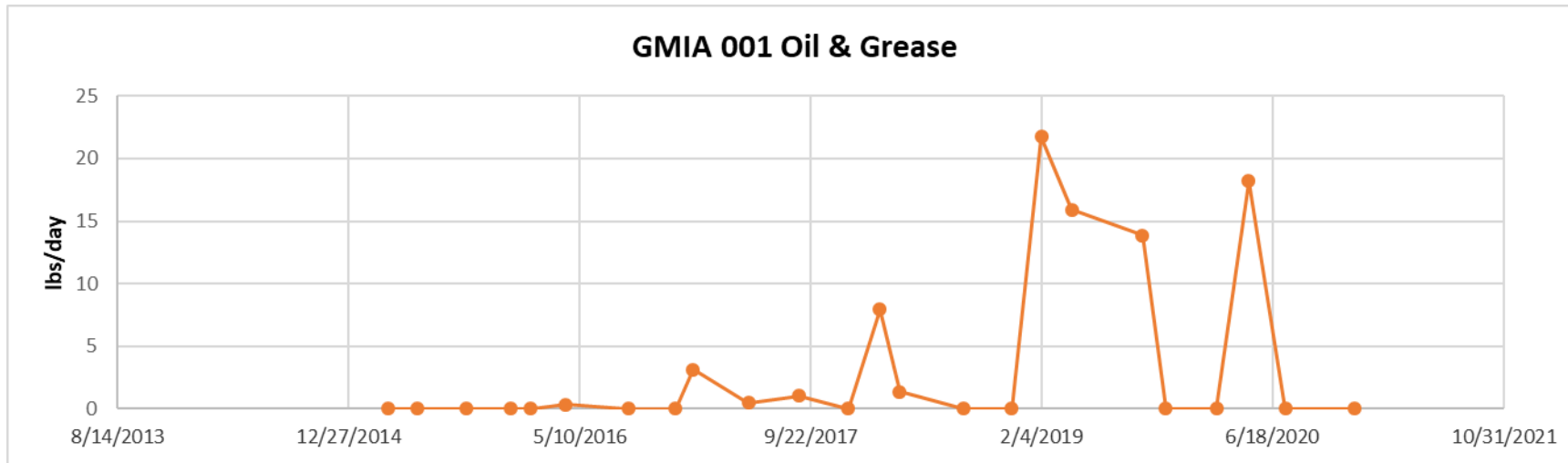
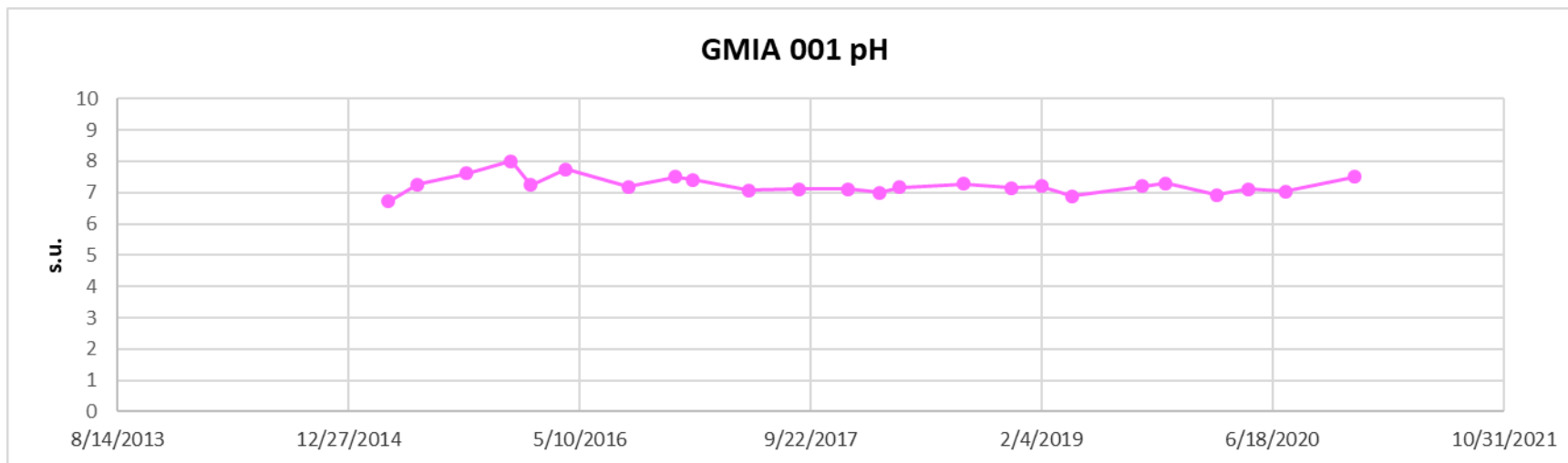


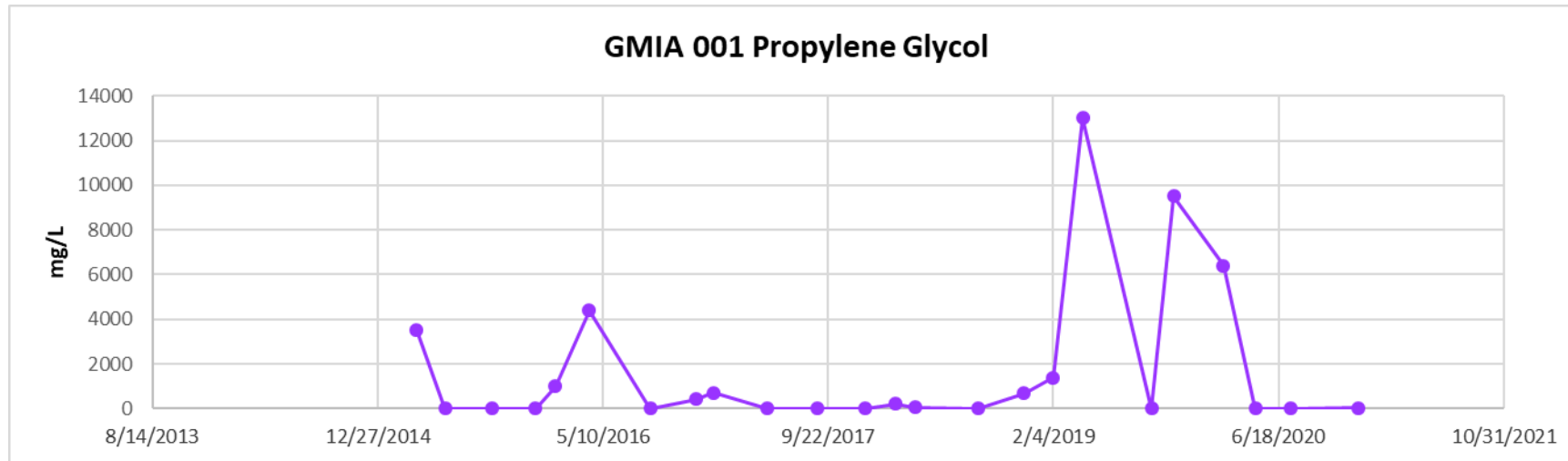
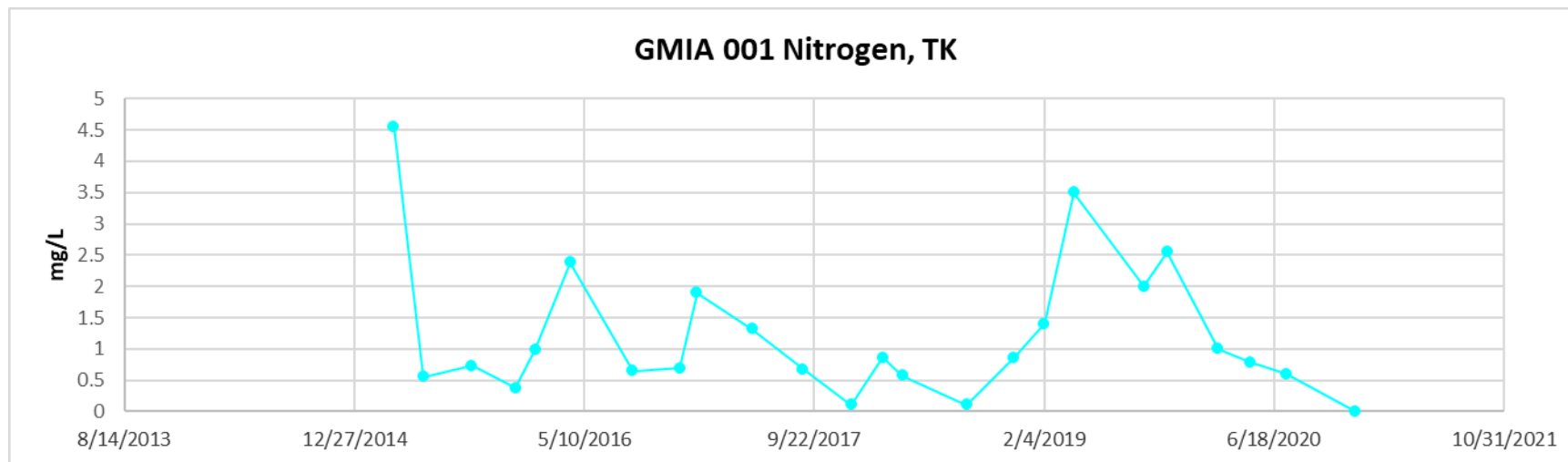
GMIA 001 Total Suspended Solids



GMIA 001 BOD5+COD Loading





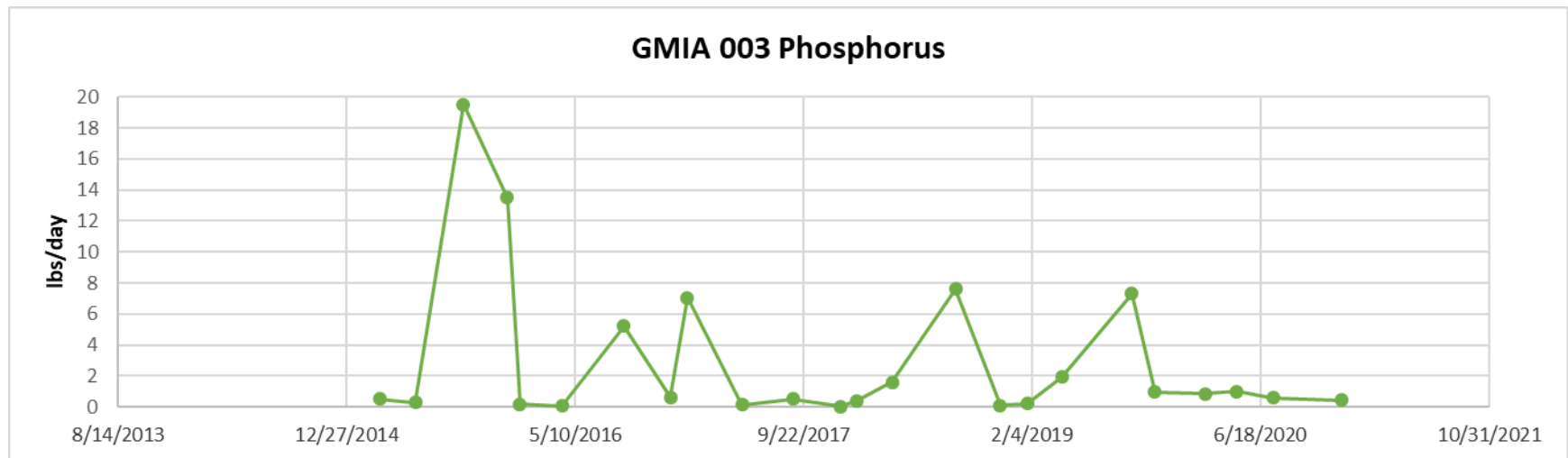
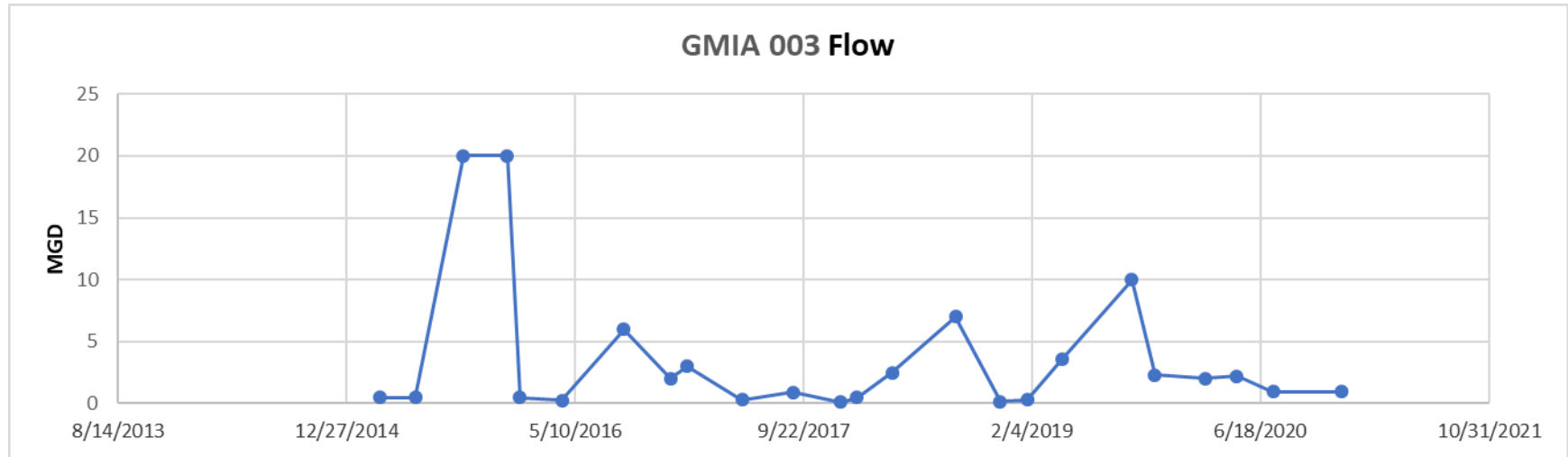


001 Data Tables:

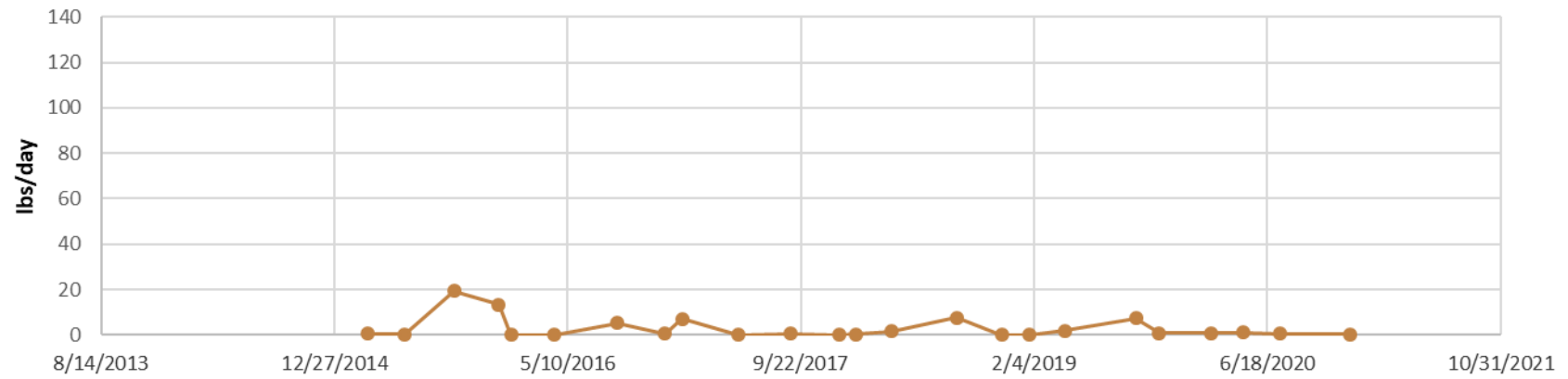
Date	BOD5 (mg/L)	COD (mg/L)	Flow (MGD)	BOD5 (lbs/day)	COD (lbs/day)	N, TK (mg/L)
3/23/2015	2260	4310	0.013	245	467	4.54
5/26/2015	53.6	104	0.113	51	98	0.552
9/8/2015	11.5	24.2	0.19	18	38	0.729
12/13/2015	60.3	87.3	0.74	372	539	0.373
1/25/2016	2400	2560	0.003	60	64	0.989
4/10/2016	2310	5530	0.02	385	922	2.38
8/24/2016	7.92	18.8	0.85	56	133	0.649
12/4/2016	509	753	0.032	136	201	0.692
1/10/2017	1130	1900	0.106	999	1,680	1.9
5/10/2017	44.3	148	0.016	6	20	1.32
8/29/2017	10.4	30.8	0.023	2	6	0.673
12/12/2017	2	8.5	0.003	0	0	0.11
2/19/2018	280	559	0.5	1,168	2,331	0.865
4/3/2018	163	269	0.062	84	139	0.576
8/20/2018	3.04	8.58	1.37	35	98	0.11
12/1/2018	834	1420	0.08	556	947	0.864
2/4/2019	1610	2800	0.12	1,611	2,802	1.4
4/10/2019	4420	20800	0.56	20,643	97,144	3.5
9/10/2019	15	23.1	0.73	91	141	2
10/30/2019	10283	14400	0.047	4,031	5,645	2.55
2/17/2020	7472	10800	0.106	6,606	9,548	1
4/27/2020	28.3	65.1	0.78	184	423	0.787
7/15/2020	10.9	37.9	1.674	152	529	0.601
12/12/2020	40	96.4	0.419	140	337	0
Avg	1414.9	2781.4	0.4	1568.0	5177.2	1.2
Max	10283.0	20800.0	1.7	20643.2	97144.3	4.5
Min	2.0	8.5	0.0	0.1	0.2	0.0

Date	O&G (mg/L)	pH	P (mg/L)	PG (mg/L)	TSS (mg/L)	P (lbs/day)	TSS (lbs/day)	O&G (lbs/day)
3/23/2015		6.71	0.00423	3500	128	0	14	0
5/26/2015	0	7.26	0.182	0	22.5	0	21	0
9/8/2015	0	7.61	0.148	0	7	0	11	0
12/13/2015	0	8	0.184	0	34.3	1	212	0
1/25/2016	0	7.24	1.01	990	37	0	1	0
4/10/2016	2.16	7.75	0.692	4400	83.5	0	14	0
8/24/2016	0	7.18	0.161	0	34.8	1	247	0
12/4/2016	0	7.51	0.297	430	11.6	0	3	0
1/10/2017	3.54	7.4	1.1	720	70	1	62	3
5/10/2017	3.53	7.08	0.345	0	12.8	0	2	0
8/29/2017	5.45	7.11	0.122	0	3	0	1	1
12/12/2017	0	7.11	0.005	0	2	0	0	0
2/19/2018	1.9	7	1.13	230	62.3	5	260	8
4/3/2018	2.64	7.16	0.226	53	7.33	0	4	1
8/20/2018	0	7.27	0.089	0	20.6	1	235	0
12/1/2018	0	7.15	0.458	700	29.6	0	20	0
2/4/2019	21.7	7.2	1.91	1400	130	2	130	22
4/10/2019	3.41	6.88	1.84	13000	34	9	159	16
9/10/2019	2.28	7.2	0.145	0	28.3	1	172	14
10/30/2019	0	7.3	1.2	9500	44.5	0	17	0
2/17/2020	0	6.93	0	6400	1	0	1	0
4/27/2020	2.8	7.11	0.142	11	14.6	1	95	18
7/15/2020	0	7.04	0.0817	0	21	1	293	0
12/12/2020	0	7.5	0.0841	39	5.4	0	19	0
Avg	2.1	7.2	0.5	1723.9	35.2	1.0	83.0	3.5
Max	21.7	8.0	1.9	13000.0	130.0	8.6	293.2	21.7
Min	0.0	6.7	0.0	0.0	1.0	0.0	0.1	0.0

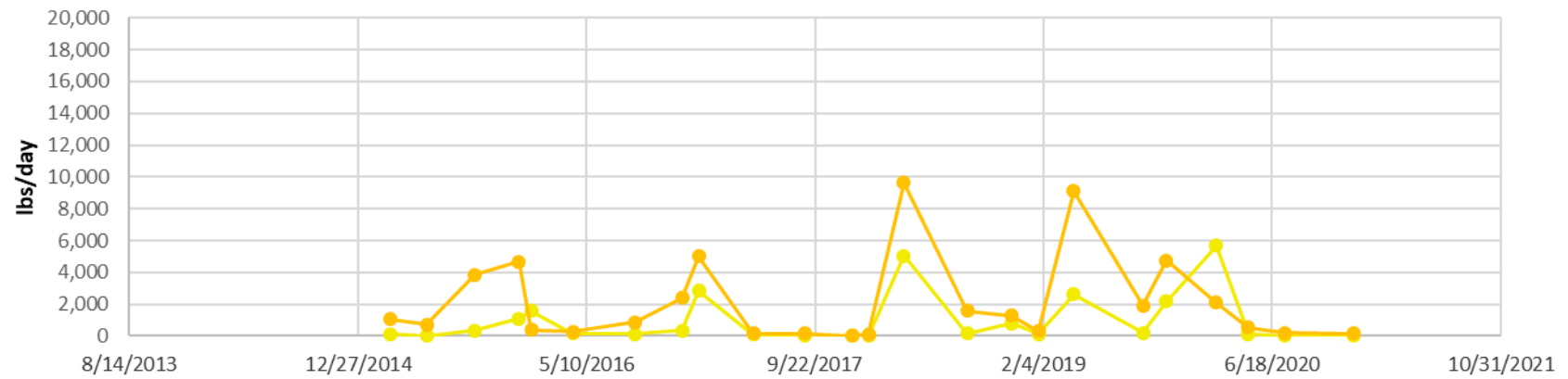
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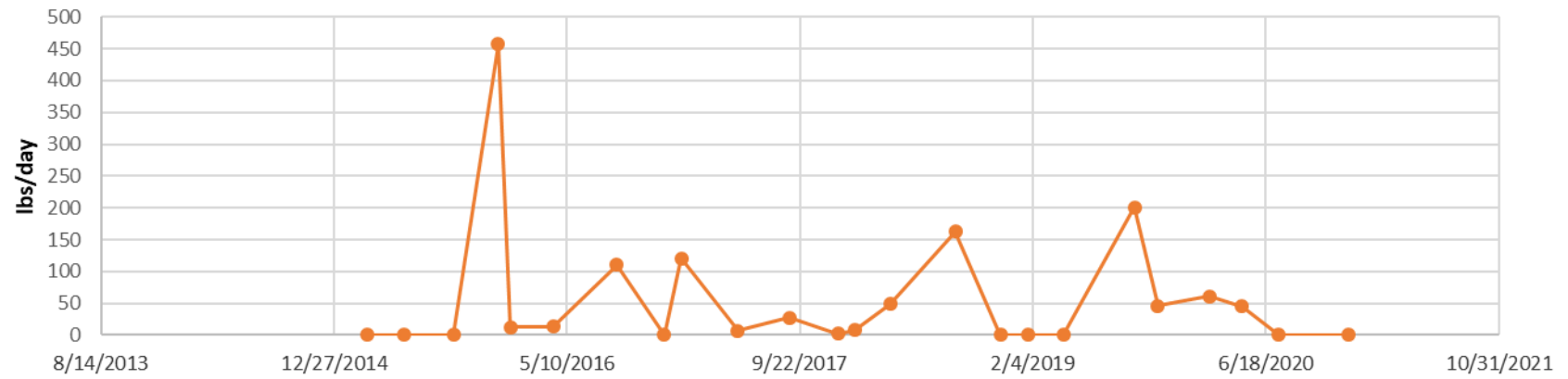
GMIA 003 Total Suspended Solids



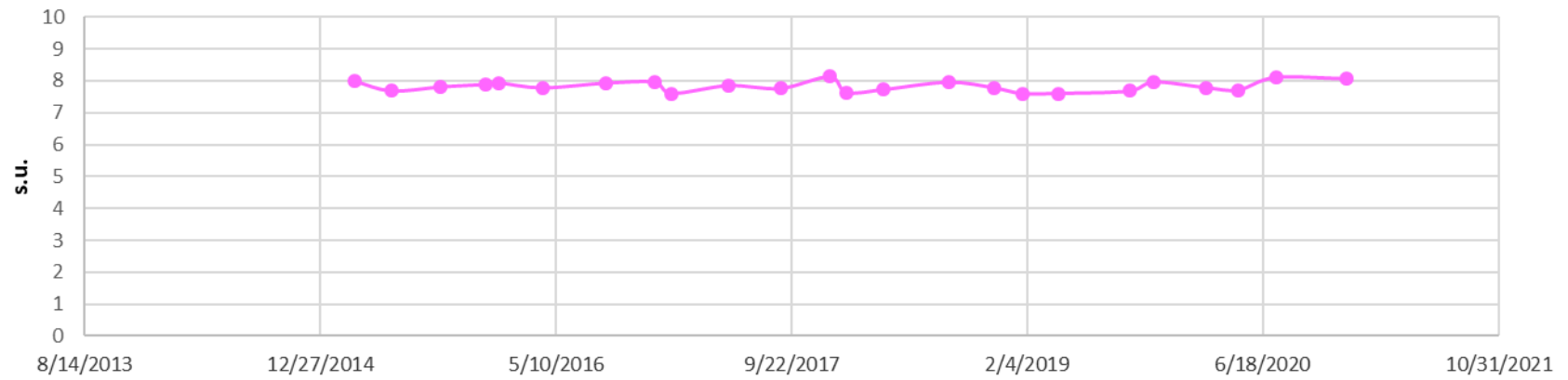
GMIA 003 BOD5+COD Loading

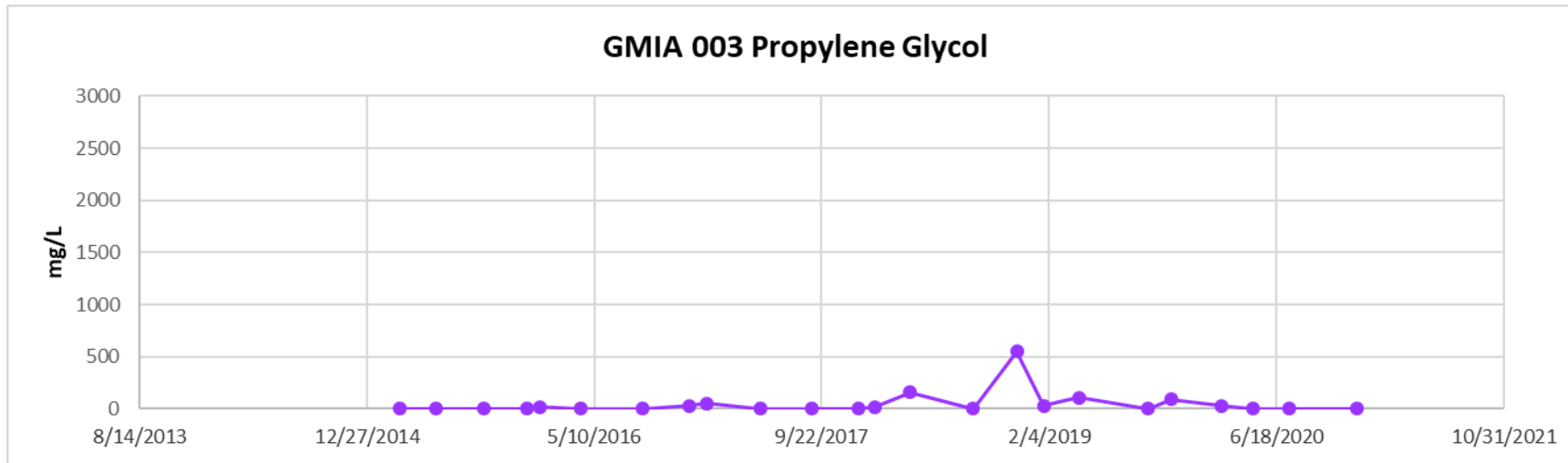
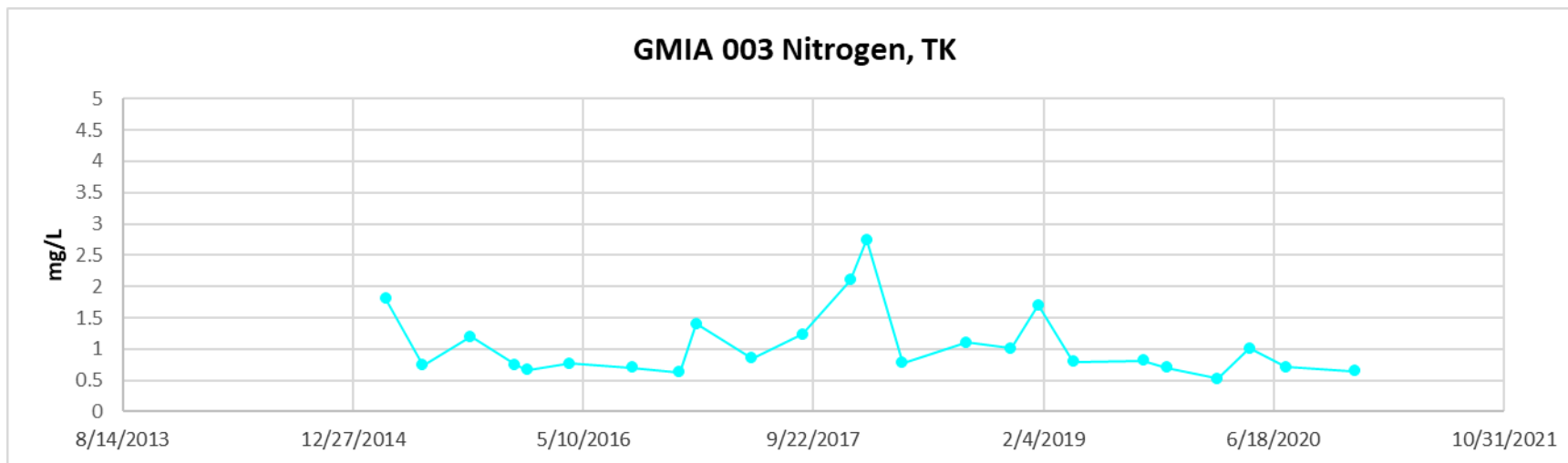


GMIA 003 Oil & Grease



GMIA 003 pH



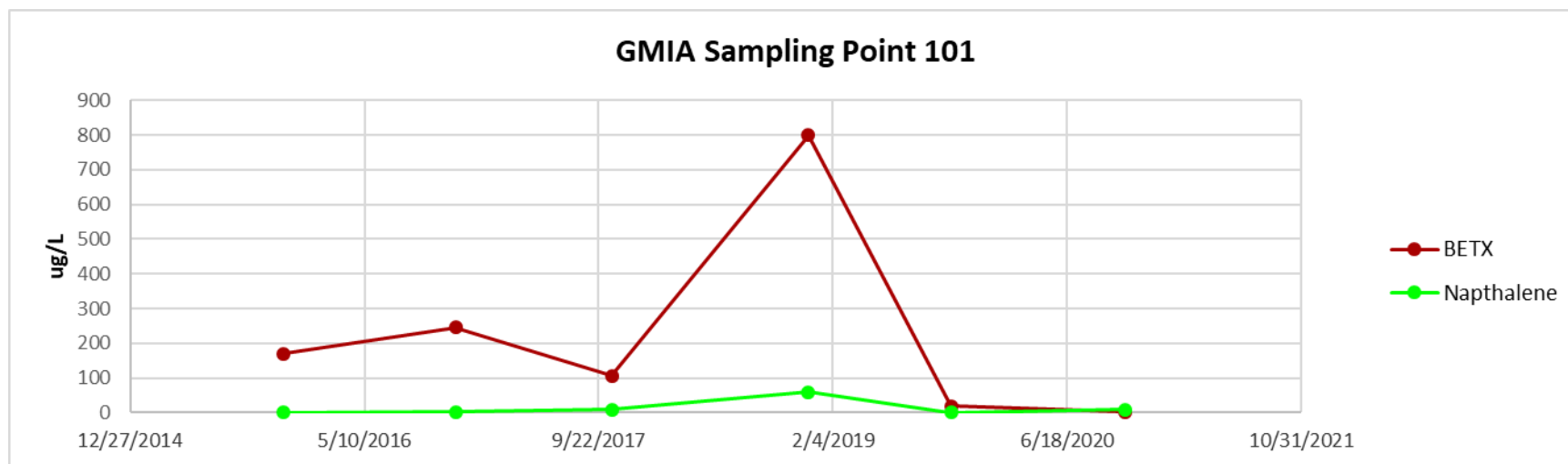
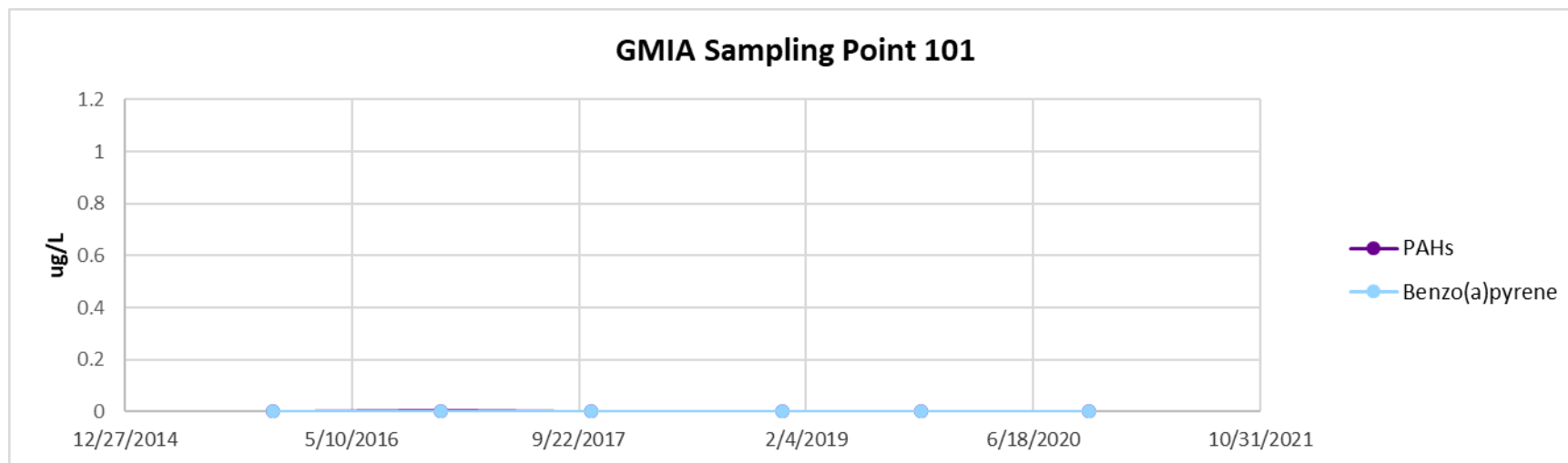


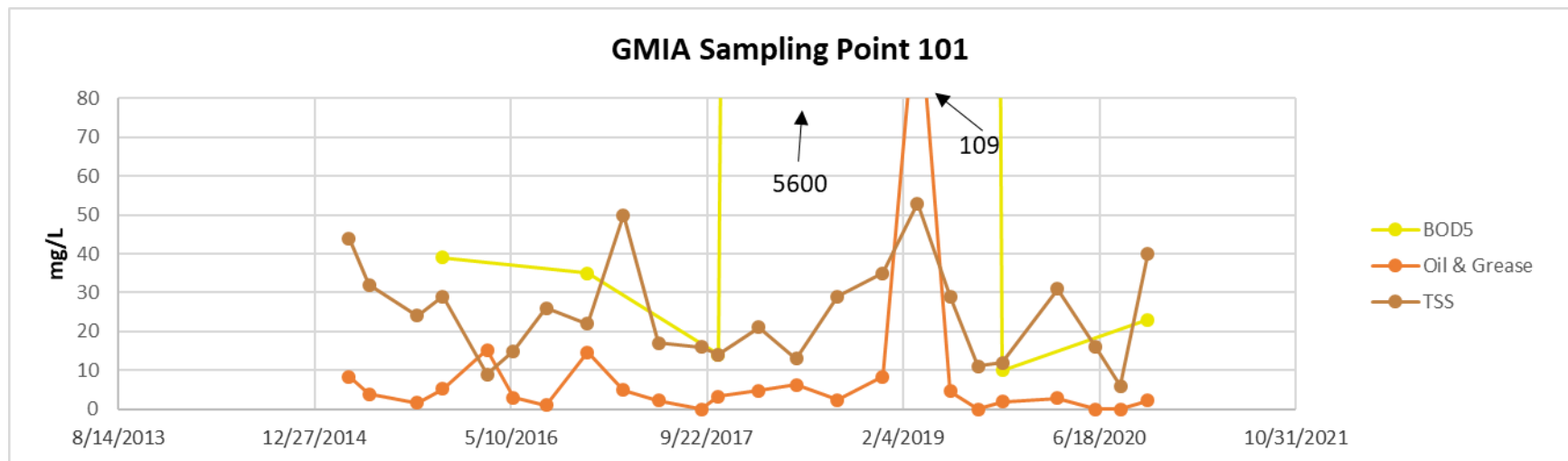
003 Data Tables:

Date	BOD5 (mg/L)	COD (mg/L)	Flow (MGD)	BOD5 (lbs/day)	COD (lbs/day)	N, TK (mg/L)
3/9/2015	26.6	250	0.5	111	1,043	1.8
5/27/2015	2.18	174	0.5	9	726	0.736
9/9/2015	2	23.1	20	334	3,853	1.2
12/14/2015	6.5	28	20	1,084	4,670	0.75
1/10/2016	380	88.2	0.5	1,585	368	0.665
4/11/2016	78.2	135	0.25	163	281	0.772
8/25/2016	2.35	17.4	6	118	871	0.7
12/5/2016	21.5	143	2	359	2,385	0.631
1/11/2017	114	200	3	2,852	5,004	1.4
5/11/2017	35.5	70.7	0.3	89	177	0.855
8/30/2017	2	20.9	0.9	15	157	1.23
12/12/2017	2.51	25.8	0.1	2	22	2.1
1/17/2018	2	26	0.5	8	108	2.74
4/4/2018	242	462	2.5	5,046	9,633	0.775
8/21/2018	2.61	26.8	7	152	1,565	1.1
11/26/2018	625	1020	0.15	782	1,276	1.01
1/24/2019	47.9	130	0.3	120	325	1.7
4/10/2019	89	308	3.55	2,635	9,119	0.796
9/10/2019	2.17	23.1	10	181	1,927	0.811
10/30/2019	113	247	2.3	2,168	4,738	0.707
2/17/2020	341	126	2	5,688	2,102	0.529
4/27/2020	6	28.9	2.2	110	530	1.01
7/15/2020	2	27.1	0.95	16	215	0.712
12/12/2020	7	20.4	0.97	57	165	0.647
Avg	89.7	150.9	3.6	986.8	2135.8	1.1
Max	625.0	1020.0	20.0	5687.9	9632.7	2.7
Min	2.0	17.4	0.1	2.1	21.5	0.5

Date	O&G (mg/L)	pH	P (mg/L)	PG (mg/L)	TSS (mg/L)	P (lbs/day)	TSS (lbs/day)	O&G (lbs/day)
3/9/2015	0	8	0.127	0	7	1	1	0
5/27/2015	0	7.68	0.0647	0	3	0	0	0
9/9/2015	0	7.81	0.117	0	4.2	20	20	0
12/14/2015	2.74	7.89	0.081	0	8.5	14	14	457
1/10/2016	2.98	7.94	0.0381	20	6	0	0	12
4/11/2016	6.36	7.78	0.0386	0	7.5	0	0	13
8/25/2016	2.2	7.93	0.104	0	3.8	5	5	110
12/5/2016	0	7.96	0.0379	30	4.2	1	1	0
1/11/2017	4.82	7.6	0.281	54	12	7	7	121
5/11/2017	2.74	7.85	0.0523	0	4	0	0	7
8/30/2017	3.69	7.76	0.0675	0	2.4	1	1	28
12/12/2017	2.36	8.13	0.0532	0	3.3	0	0	2
1/17/2018	1.91	7.63	0.0982	20	7.67	0	0	8
4/4/2018	2.36	7.72	0.0756	160	6.67	2	2	49
8/21/2018	2.79	7.96	0.13	0	5	8	8	163
11/26/2018	0	7.78	0.0772	550	12.8	0	0	0
1/24/2019	0	7.6	0.087	32	8	0	0	0
4/10/2019	0	7.6	0.0654	110	6.5	2	2	0
9/10/2019	2.41	7.68	0.0878	0	4.6	7	7	201
10/30/2019	2.39	7.97	0.0504	93	7	1	1	46
2/17/2020	3.65	7.79	0.0519	32	14	1	1	61
4/27/2020	2.46	7.71	0.0547	0	8.4	1	1	45
7/15/2020	0	8.11	0.0741	0	4.4	1	1	0
12/12/2020	0	8.07	0.0563	0	4.2	0	0	0
Avg	1.9	7.8	0.1	45.9	6.5	2.9	2.9	55.1
Max	6.4	8.1	0.3	550.0	14.0	19.5	19.5	457.0
Min	0.0	7.6	0.0	0.0	2.4	0.0	0.0	0.0

101:



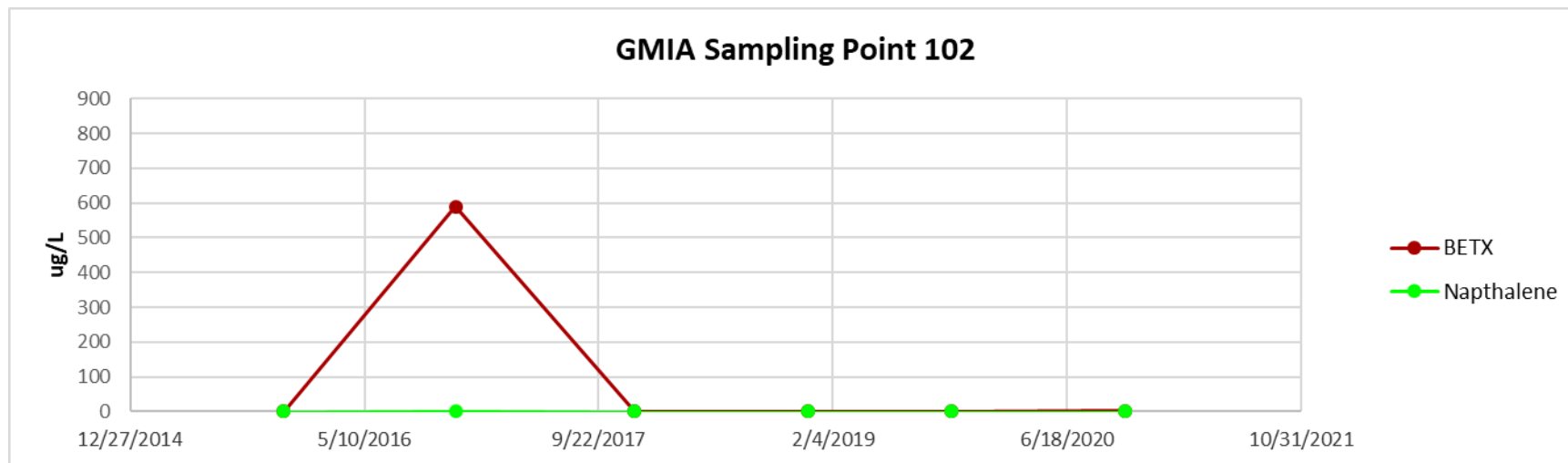
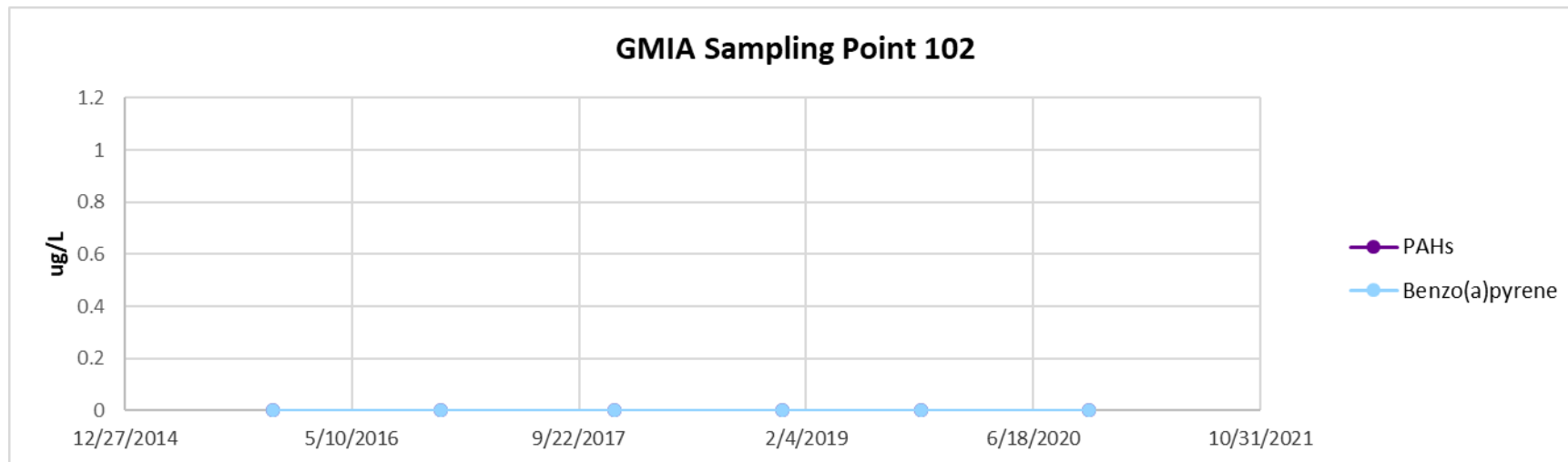


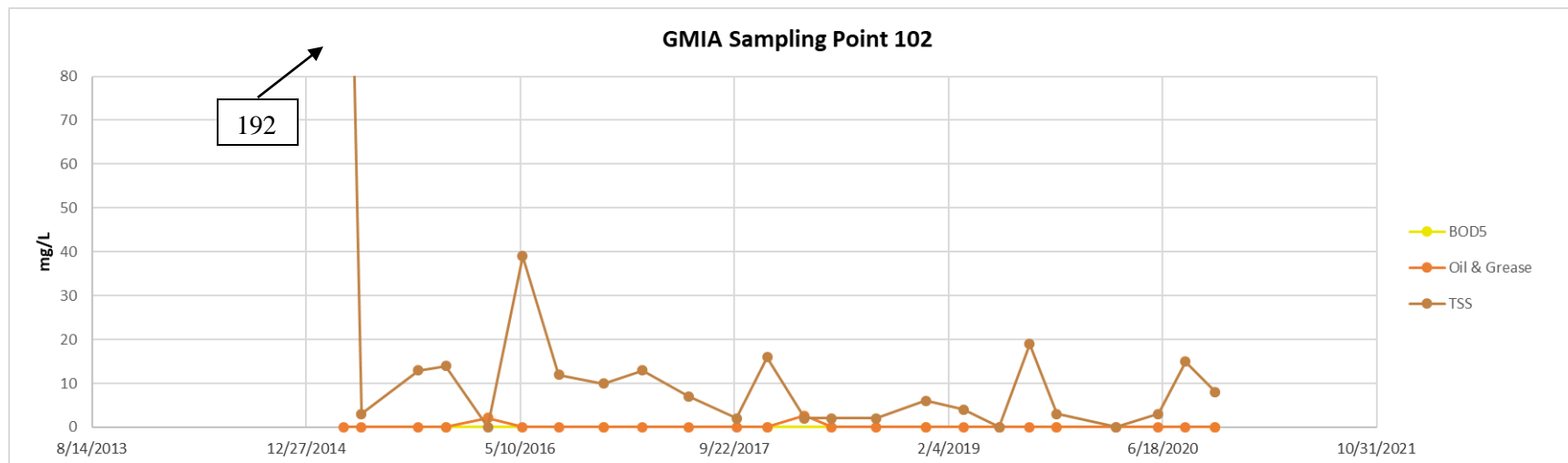
101 Data Tables:

Date	Benzo(a)pyrene (ug/L)	BETX (ug/L)	BOD5 (mg/L)	Naphthalene (ug/L)	PAHs (ug/L)
11/19/2015	0	170	39	0	0.0007
11/21/2016	0	246.1	35	3	0.0019
10/20/2017	0	106.4	14	8.3	0
12/13/2018	0	798.9	5600	59.4	0
10/15/2019	0	18.59	10	0	0
10/19/2020	0	2.76	23	8.76	0

Date	Q (gpd)	O&G (mg/L)	TSS (mg/L)
3/25/2015	4	8.4	44
5/15/2015	4	3.8	32
9/15/2015	4	1.6	24
11/19/2015	4	5.2	29
3/11/2016	4	15.2	9
5/16/2016	4	2.9	15
8/8/2016	4	1.1	26
11/21/2016	4	14.7	22
2/20/2017	4	4.9	50
5/22/2017	4	2.2	17
9/8/2017	4	0	16
10/20/2017	4	3.2	14
1/31/2018	4	4.8	21
5/7/2018	4	6.2	13
8/20/2018	4	2.4	29
12/13/2018	4	8.3	35
3/11/2019	4	109	53
6/3/2019	4	4.6	29
8/13/2019	4	0	11
10/15/2019	4	2	12
3/2/2020	4	2.8	31
6/8/2020	4	0	16
8/10/2020	4	0	6
10/19/2020	4	2.2	40

102 (removed):



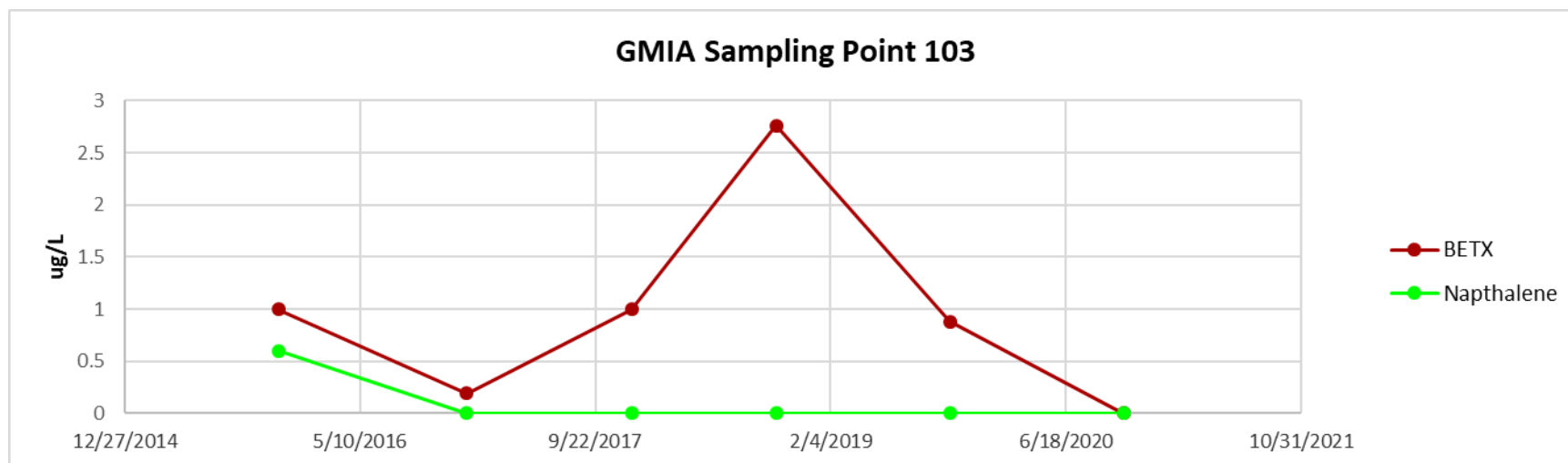
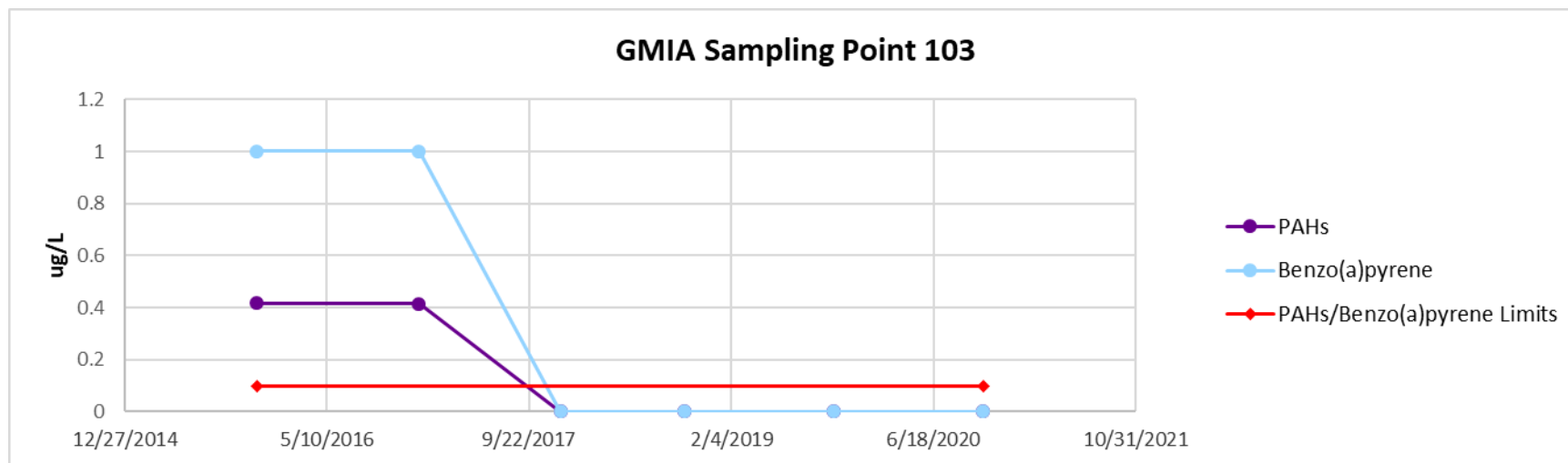


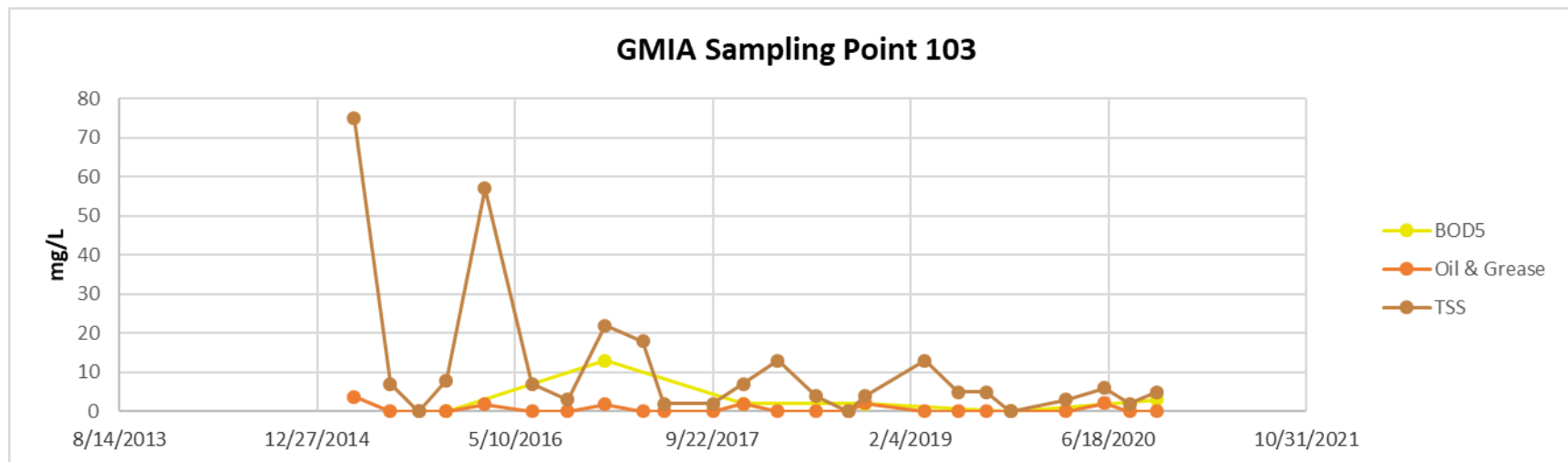
102 (removed) Data Tables:

Date	Benzo(a)pyrene (ug/L)	BETX (ug/L)	BOD5 (mg/L)	Naphthalene (ug/L)	PAHs (ug/L)
11/19/2015	0	0	0	0	0
11/21/2016	0	590	0	0.6	0
12/8/2017	0	0	0	0	0
12/13/2018	0	0	0	0	0
10/15/2019	0	0	0	0	0
10/19/2020	0	2.76	0	0	0

Date	Q (gpd)	O&G (mg/L)	TSS (mg/L)
3/25/2015	4	0	192
5/5/2015	4	0	3
9/15/2015	4	0	13
11/19/2015	4	0	14
2/25/2016	4	2.1	0
5/16/2016	4	0	39
8/8/2016	4	0	12
11/21/2016	4	0	10
2/20/2017	4	0	13
6/7/2017	4	0	7
9/28/2017	4	0	2
12/8/2017	4	0	16
3/5/2018	4	2.6	2
5/7/2018	4	0	2
8/20/2018	4	0	2
12/13/2018	4	0	6
3/11/2019	4	0	4
6/3/2019	4	0	0
8/13/2019	4	0	19
10/15/2019	4	0	3
3/2/2020	4	0	0
6/8/2020	4	0	3
8/10/2020	4	0	15
10/19/2020	4	0	8

103 (removed):



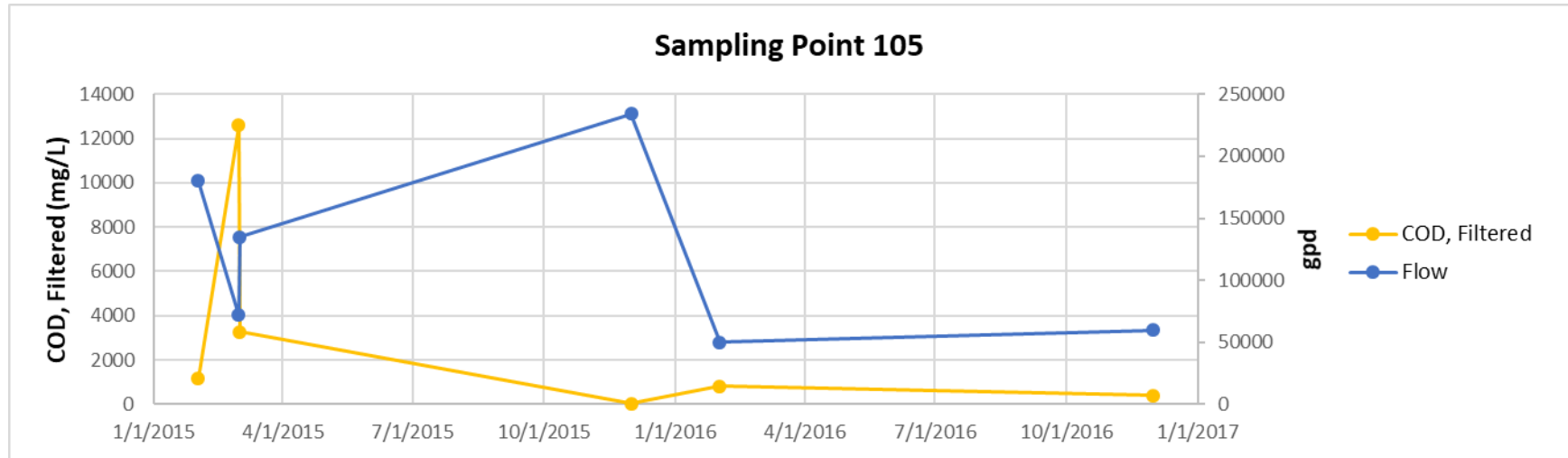


103 (removed) Data Tables:

Date	Benzo(a)pyrene (ug/L)	BETX (ug/L)	BOD5 (mg/L)	Naphthalene (ug/L)	PAHs (ug/L)
11/19/2015	1	1	0	0.6	0.416
12/23/2016	1	0.19	13	0	0.416
12/8/2017	0	1	2	0	0
10/11/2018	0	2.76	2	0	0
10/15/2019	0	0.88	0	0	0
10/19/2020	0	0	3	0	0

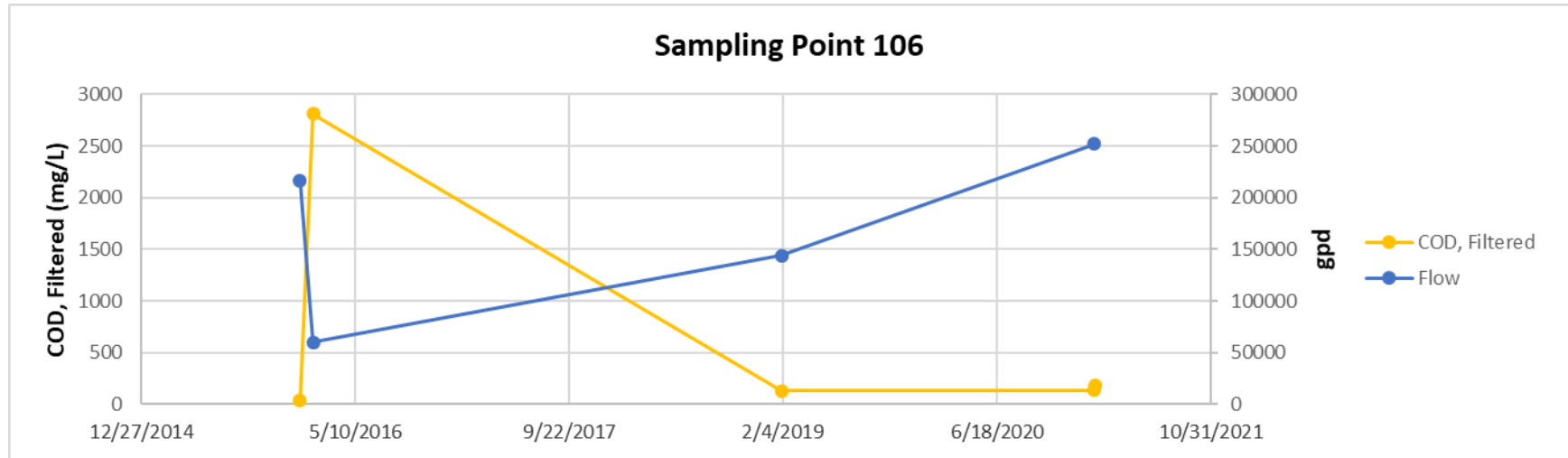
Date	Q (gpd)	O&G (mg/L)	TSS (mg/L)
3/30/2015	4	3.8	75
6/30/2015	4	0	7
9/10/2015	4	0	0
11/19/2015	4	0	8
2/23/2016	4	1.9	57
6/22/2016	4	0	7
9/20/2016	4	0	3
12/23/2016	4	1.8	22
3/30/2017	4	0	18
5/22/2017	4	0	2
9/22/2017	4	0	2
12/8/2017	4	2	7
3/5/2018	4	0	13
6/11/2018	4	0	4
8/30/2018	4	0	0
10/11/2018	4	2.2	4
3/11/2019	4	0	13
6/3/2019	4	0	5
8/13/2019	4	0	5
10/15/2019	4	0	0
3/2/2020	4	0	3
6/8/2020	4	2.2	6
8/10/2020	4	0	2
10/19/2020	4	0	5

105:



Date	COD, Filtered (mg/L)	Q (gpd)
2/1/2015	1150	180000
3/1/2015	12600	72000
3/2/2015	3260	135000
12/1/2015	26.7	234000
2/1/2016	811	50000
12/1/2016	410	60000

106:



Date	COD, Filtered (mg/L)	Q (gpd)
1/1/2016	34.3	216000
2/1/2016	2810	60000
2/1/2019	132	144000
2/1/2021	138	252000
2/2/2021	188	0

General Mitchell International Airport (MKE) BOD-COD relationship

From USGS:

MKE monitoring data was used to develop an ordinary least squares regression in log-base 10 space to be used for estimation of BOD₅ using COD concentrations. Data collected from 1996 – 2021 during the months of November through April from all five monitoring stations were used (Figure 1, sites differentiated by color). The resulting regression ($R^2 = 0.96$) is illustrated below. The lower part of the regression was defined primarily by Inflow 701 data. The downstream site at Wilson Park Creek and Outfall 3 defined much of the medium-low portion, and Outfall 007 and Outfall 1 included medium-high concentrations:

Sites

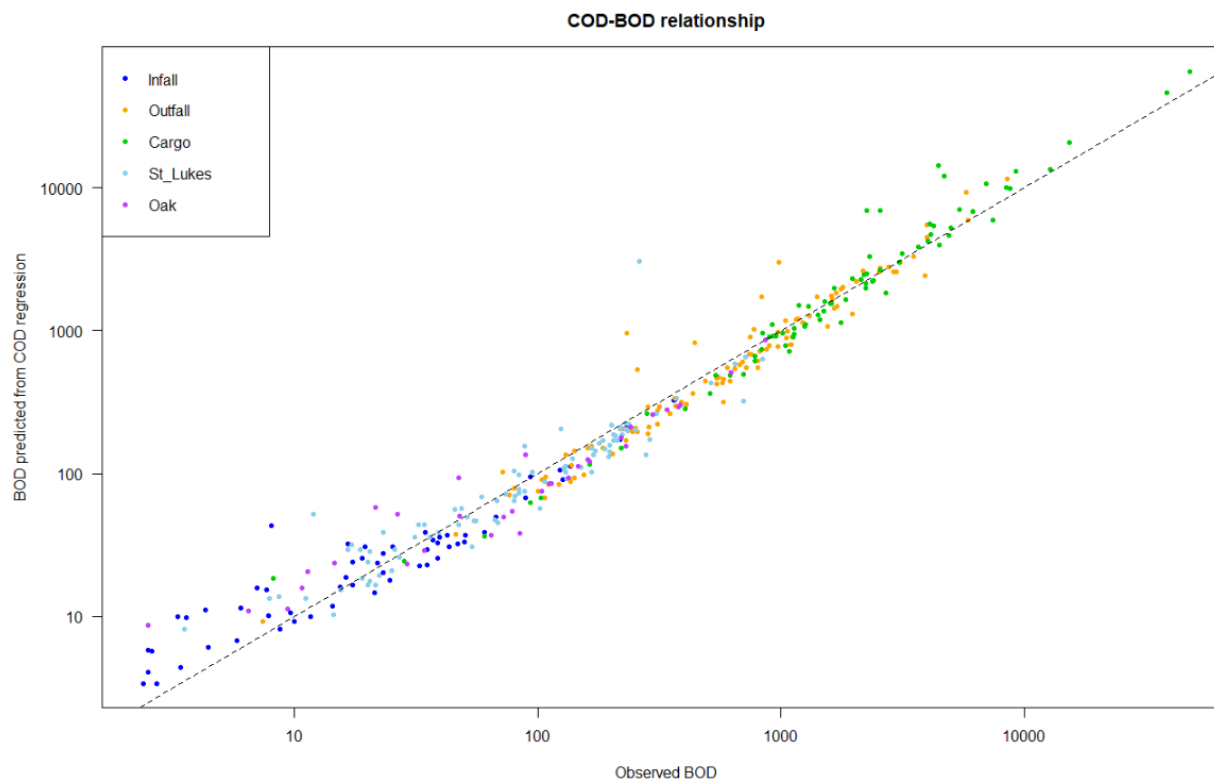
Inflow 701 (Infall)

Outfall 007 (Outfall)

Outfall 001 (Cargo)

Outfall 003 (Oak)

St. Lukes (Wilson Park Creek at St. Lukes Hospital)



Regression relationship between BOD₅ and COD at MKE monitoring stations, including observed BOD₅ concentrations and predicted (fitted values) BOD using COD and the regression equation. Sites are differentiated by color. Dashed line represents the 1:1 relationship.